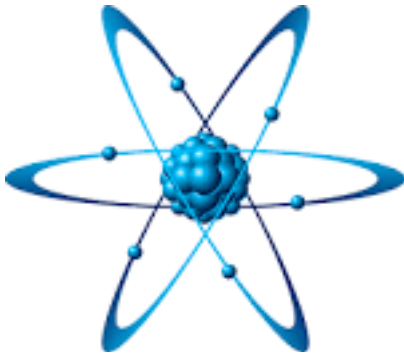




UNIVERSITY OF GOTHENBURG  
ACADEMY OF MUSIC AND DRAMA

# **THEATRICAL PHYSICS: WHAT MIGHT IT BE?**

TO USE THE WORLD OF PHYSICS IN ORDER TO UNDERSTAND THE NATURE OF THEATRE



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Contemporary Performative Arts

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Title: *Theatrical Physics- What Might It Be? To use the world of physics in order to understand the nature of theatre*

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## ABSTRACT

The project aims to find the links between theatre and physics and to gather response around the idea of "theatrical physics" – what might it be? My project circles around the possibility of connecting physics and theatre in order to understand the basic nature of what theatre is and perhaps to expand the idea of what theatre might be. The text has the structure of a travel log, a journey journal, that takes the reader on an expedition through my process of exploring this theme. I wanted to give the text a performative character. It describes, but also stages my expedition, through language.

Key words:

Theatrical physics, performative writing, post-dramatic performance, post-spectacular performance, lecture performance, performance lecture, ritual performance, visual dramaturgy. Para-theatrical catchment area: Combining the act of showing with the act of watching. Non-illusion. Closed circuit. Gravity. Strenght.



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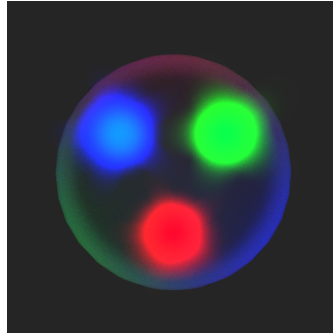
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## INTRODUCTION:

My project circles around the possibility of connecting physics and theatre in order to understand the basic nature of what theatre is and perhaps to expand the idea of what theatre might be.

The text has the structure of a travel log, a journey journal, that takes the reader on an expedition through my process of exploring this theme and that is why the text follows a chronological structure.

I consider the artistic work process, just like the writing, an on-going process in constant motion where that which evolves in time is in focus rather than having a set goal. It follows a nomadic, wandering path.

*The act of walking involves time and space: the bodily encounter with the world, the concrete conditions of matter and movement – all of these need time when part of a slow process. In today's society, this slowness and materiality sometimes deviate from the path of efficiency and rapid progress that characterizes the flickering flow of digital media and urban life.<sup>1</sup>*

I'm interested in the language of theatre as a possible way of expressing myself, also in writing: How fiction and reality merge, how the text stages a reality.

I wanted to give the text a performative character. It describes, but also stages my expedition, through the language.

*This piece is about performance in everyday interactions. Our interaction is a performance about alternatives to scholarly representation. Scholarship and fiction are more than related; they are incestuous cousins.<sup>2</sup>*

My path through the text has the shape of an inner voice, perhaps a *persona*, where I invite the reader to follow me on my journey that starts in Gothenburg in september 2

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<sup>1</sup> Cecilia Lagerström, *Activating Imaginative Attention and Creating Observant Moments in the Everyday Through the Art of Walking*. Nordic Theatre Studies, Volume 27: number 2, 2015

<sup>2</sup> Ronald J. Pelias. *An Autobiographic Ethnography of Performance in Everyday Discourse*, Journal of Dramatic Theory and Criticism, 1994, 168

# CHAPTER ONE

*And. A few examples. Or suggestions. For you. You have entered. And I. And they? Connections. Possibilities. Fare well. You see?*<sup>3</sup>

**2014-10-20**

## **A BEGINNING**

When I cast my mind into that void of memories that make up my past... different kinds of memories reveal themselves to me.

I arrive in Gothenburg. The air is thick of memories. All these different layers of times.

During the first days there are a lot of introductions. I hear myself describing my past: "I come from the field of physical theatre".  
What is physical theatre? Really?

My mind wonders in indistinct rays.

I remember that I never understood the subject "physics" in school.

What is physics?

I look it up. It derives from Greek:

***phusikē*: 'knowledge of nature'.**

.....

I start to think about the word *theatre*, also derived from Greek:

***theatron (theasthai)* : 'behold'**

And *theatron* is the very place, the stage, where the theatre is born and where we, in the beginning of times, enacted the stories about Isis and Osiris, about rebirth.

Physical theatre is to use natural force to celebrate rebirth.

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<sup>3</sup> Finn Iunker, "The Answering Machine", (Oslo, Kolon Forlag, 1994), 1

This is what I want to do.

Or, let's call it ***theatrical physics!***

Now, let me introduce the concept of "Theatrical Physics".

What is this? What might it be?

It can be:

- \*physical theatre for the lazy and the elderly.

- \*performance lectures concerning physics.

- \*lab-situations with experiments and research in the field of physics, like acoustics, new materials, magnetic fields etc.

- \*a conscious and exact attempt to make equal the different layers in a theatre performance, i.e light, sound, space and time, in a scientific manner, bridging the gap between performance and science.

Since I never understood the subject physics when I was a child at school, it's almost like an exorcism, or incantation, a spell, to overcome my lack of understanding and to let myself indulge in physics in all sorts of messy and unscientific ways.

## **TIPPING POINT – AN INITIAL PROJECT**

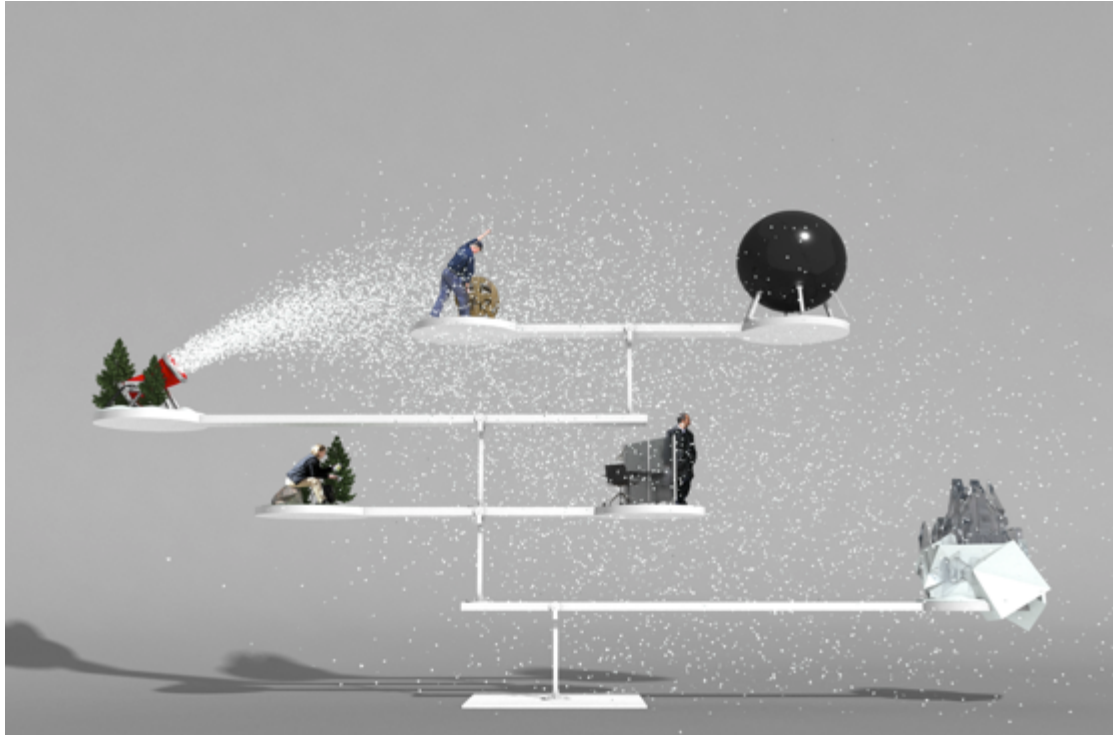
A background for this project is actually a previous project, which also formed a part of my early plans for the exploration of theatrical physics.

*Tipping Point* is a monumental performative sculpture that started out as a theatre performance project initiated in 2011 by me and the producer Jasmine Wigarth-Göthman from Teater Giljotin in Stockholm.

Initially the project was called *Weather Theatre* and was meant to be a pendant to our collaborators the artist duo Bigert&Bergströms film and exhibition *The Weather War* that deals with the relation between humans and the climate, weather manipulation and mankind's attempt to "play God".

However, one thing led to another, and suddenly the project had swelled into a 7 meter high, 20 meter long and 2 tonnes heavy sculpture where we got entangled in a very complicated and non-successful collaboration with the Department for Applied Physics at Chalmers.

The sculpture consists of six platforms, inhabited by four actors/persons: one who sits on a rock in a dystopic landscape, listening to the weather reports; one scientist in a rusty parabol antenna; one is the artist, the weather God who controls the weather machines, and yet another one is a climate refugee, constantly changing clothes inside a mirrored bowl. These human activities balance against a melting ice-block and a big black sphere. The full stop.



We wanted to explore the idea that live art can be a sculpture and can actually have the same kind of duration that a physical object has: being there from morning to night, throughout the opening hours of a gallery. But when the last visitors leave, and the gallery closes its doors for the evening, parts of the sculpture will walk out as well.

We had scheduled the premiere of *Tipping Point* for 3<sup>rd</sup> of July 2014 in the Art Space at *Artipelag* outside of Stockholm, with a generous budget provided by the venue. However, it turned out that Chalmers was unable to deliver and we had to cancel.

The sculpture is currently undergoing new calculations and we are aiming to present our phantasmatic project to the public at some point during 2017.

Huge things take a long time to materialize. It is to *not give up* that is the trick. To endure. To be stubborn.

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**2014-10-15**

## **I AM HERE**

I've been wading through these kinds of thoughts:

### **1. Art and science. Coping with scientists:**

*Art and science have traditionally been perceived as mutually exclusive epistemologies and disciplines, but in recent years there has been increasing interest in merging the two. It remains unclear how and on which terms – if any – art and science can be seen to cross-pollinate each other today. Which structural and methodological similarities and differences characterise the two disciplines? Why is an exchange between them relevant right now? Is it a dialogue between equals? And what role does financing and funding play in a relationship between what sceptics might call a mismatched couple?<sup>4</sup>*

From my experience – so far - dealing with the scientific world have been more than confusing. One might perhaps think that artists are difficult to collaborate with – that we are lazy and alienated from society. My experience is that artists are reliable, dutiful and eager to communicate.

Scientists, on the other hand – engineers and physicists in particular – have proven to be over-sensitive, petty and vindictive.

This is, needless to say, *my subjective, very biased and, hopefully temporary opinion!*

### **2. Finding the connection between Theatre and Physics:**

Performance in the Platonic Period:

a) *Let no one ignorant of geometry enter.*

This phrase was engraved at the door of Plato's Academy in Athens.

For Plato, geometry is not an end in itself, but only a *prerequisite* meant to test and develop the power of abstraction in the student, his ability to go beyond the level of sensible experience which keeps us within the "visible" realm, that of the material world, all the way to the pure intelligible. And geometry can also make us discover the existence of truths that may be said to be "transcendent" in that they don't depend upon what we may think about them, but have to be accepted by any reasonable being. This should lead us into wondering whether such transcendent truths might not exist as well in other areas, such as ethics and matters relating to men's ultimate happiness, whether we may be able to "demonstrate" them or not.

b) In the culture of classical Greece, the element of "performance" played a prominent role in various aspects of daily life. The term "performance culture" is often applied to classical Greece, especially to Athens, in reference to many areas where the citizens conducted their activities in public, such as dramatic and poetic competitions, athletic competitions and debates. All these activities that took place in public and it was of great importance to be a good performer, to show excellence.

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<sup>4</sup> Invitation to the seminar "Art and Science" at Overgaden Institute, Copenhagen 2014-10-01

### **3. Wonder as starting point:**

Plato states that wonder is the beginning of all philosophy, wonder, or astonishment. In his remark in the *Theaetetus*: "this feeling – a sense of wonder – is perfectly proper to a philosopher: philosophy has no other foundation"

Is it possible to apply this kind of thinking to the theatre that I want to make?

**2014-10-31**

#### **AN OPEN LETTER TO CHALMERS WITH THE HELP FROM MR BOB DYLAN**

Dear Mr Chalmers

Please don't put a price on my soul

My burden is heavy

My dreams are beyond control

When that steamboat whistle blows, I'm gonna give you all I got to give

And I do hope you receive it well

Dependin' on the way you feel that you live

Dear Mr Chalmers

Please heed these words that I speak

I know you've suffered much

But in this you are not so unique

All of us, at times, we might work too hard

To have it too fast and too much

And anyone can fill his life up with things he can see, but he just cannot touch

Dear Mr Chalmers

Please don't dismiss my case

I'm not about to argue

I'm not about to move to no other place

Now, each of us has his own special gift, and you know this was meant to be true

And if you don't underestimate me,

I won't underestimate you<sup>5</sup>



## CHAPTER TWO

*So. Where to begin. Perhaps it would be best if we started with what is obvious. To collect material. So that, in the end, when we have put all the obvious things on the table, we will perhaps know something. And I think it will be easy to move on from there. Yes, I think it will be very easy.*<sup>6</sup>

**2014-11-22**

### **AN ATTEMPT TO FIND THE INVISIBLE LINK BETWEEN THEATRE AND PHYSICS**

Combine to create tension! Friction! Combine to create fiction!

Combining, in a clever way, theatre performance and physics.

To use the language of mathematics:

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<sup>5</sup> "Dear Landlord", Bob Dylan, from the album "John Wesley Harding", Columbia Records, 1967

<sup>6</sup> Finn Iunker, "The Answering Machine", 1994, 5



1+1=2 physical theatre  
1+1≈2 psychological theatre  
3=1+1+1 theatrical physics

I'm in a state of change....  
I begin to accept the absence of sculpture.

A lost gig is also a gig. Ein Weg ist ein Weg, auch in Nebel.  
A road is a road, also in fog.

I'm trying to connect to my past and to my future, and, meanwhile, deal with the present.

To use the theatre as a vehicle for staging difficult and complex subjects and make something visible.

**2014-12-05**

### **THRUTH MOVES IN CIRCLES, OR AT LEAST ROUND GEOMETRICAL FIGURES**

I find myself moving in a circle: around Chalmers, Hvitfeldtska gymnasiet, where I went to college, and HSM (The Academy of Music and Drama). There is a Greek woman in our class, Valentina. I remember. I studied classical greek when I was in college.

In the course with Joakim Stampe, in december 2014, we are asked to find a place in Gothenburg where we have never been but always wanted to go.

I remember: Antikmuseet. This tiny museum I've heard so much about but never been to.

It's placed right next to HSM!

I'm lucky. It's open!

I enter the basement. A woman is speaking Greek on the telephone.

She gives me a great tour around the small museum. She ends the tour by saying:  
"This one is my favorite. He is so handsome. Everyday I stroke him on the chin. I love him"

I decide to go to Athens!



Later that day there is a lecture at HSM: the philosopher Simon Critchley talks about David Bowie.

I go there because I love David Bowie, but when I get there Critchley has changed his mind and instead he talks about the theatre in ancient Athens. What a great coincidence.

I repeat my decision: to Athens!

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**2015-02-05**

## **HEARING IS A BEUTIFUL SENSE: SOUND IS A BEAUTIFUL DIMENSION: BUT IT'S ALL ABOUT COMMUNICATION**

### **FISH - A *love story***

In February I made a sound performance, as part of my course with Staffan Mossenmark. This was the first time that I did a sound-based piece, on my own, by myself. I decided to keep it simple and lustful, and to go to Åstol, the small island outside Gothenburg where I used to live during some fine years. I wanted to make recordings about fish with the locals, collaborate with a composer, and then present it, in the Fiskekörkan (the Fish Church) in Gothenburg, a traditional fish market.

I rented a car and went to Åstol together with my friend and colleague Annikki, on a day when there was a raging snow storm. Not so many people were outside at all which was somewhat problematic as I had planned to catch them going to and from the shop or just being outside, which they normally are. The ones we met all agreed to participate and answer my questions about which fish they prefer, which one is most beautiful, tasty etc. I had prepared a space in the waiting hall by the ferry, with coffee and buns, where I wanted to bring them for the recording to get a better sound, but this proved to be impossible since nobody was going with the ferry in the storm, so I had to do the recordings in the shop or outside.

I was rather touched by the way they patiently answered questions like "which one is the most beautiful fish?", "what fish is ugliest?" and "is there a fish that you think seems more clever than the others", and I understood that they agreed to do this *because they knew me*. (I lived on the island between 2005-2008) They trusted I wouldn't use the material in any way they would disagree with.

The next step was to leave the material to the composer Olle Peterson, who had agreed to my proposal to collaborate, who was going to edit and arrange the piece, *and I had to trust that he would do something that he felt proud about*. He told me to get a title and a short text to print, to add to the piece.

I went to the Fish Church to communicate with the people at the restaurant where I wanted to position myself and with the shop next door to borrow a red shirt with the logo of a fish monger on it. I decided the title: "Fish – a love story", and as text an excerpt about the colours blue and red, from "*The Answering machine*" by Finn lunker, a text that I recently evoked from my memory.

The reason for me to chose that text was that I decided to have "a recipy for fish soup" as a starting point for the soundscape, to find metaphores for the ingredients: carrot, onion and fish. Carrot is Strife and Force and Red, onion is Peer Gynt, emptiness, no core = Blue. Fish is Christ and bliss and the colour purple.

*And suddenly you like the colour blue again. And for so many years you haven't liked the colour blue at all. And now you see that blue is right and everything else is wrong. And then? And then suddenly red comes back to you. And now blue must go of course. And if I don't want blue to go? If blue didn't go, everything in your mind would be totally purple and very confusing.<sup>7</sup>*

I bought a pair of blue headphones to connect to my red loudspeaker, and "my mind went totally purple and very confusing [...] Of course purple is also quite nice. And it will come, confusing or not. They do come back to you".

And I realised how much I love to work with metaphors, playing with and contrasting text and action, thus creating something new, something third.

I also realised:

It's not about fish, it's about communication. To dare to ask. To have a clear goal in order to be able to ask.



**2015-04-13**

## **IN SEARCH OF A PHYSICIST**

I spend a month in Athens in March 2015. I rent a small flat on the 5th floor with a veranda as big as the flat. From the veranda I can see Acropolis. I'm glad they don't have internet in the flat, this gives me the freedom to read and listen to music. The woman who owns the flat is Danish and seems to be some kind of artist, maybe in her 60-ies. It's furnished in a way that I remember from the 80-ies. Rustic, Greek-romantic, artistic. Nice. Her cd-collection consists almost exclusively of Maria Callas records.

So I spend my evenings staring at Acropolis and listening to Maria Callas. I drink lemon water and sweet wine and read Plato, Aischylos, Seinfeldt, Lappalainen.

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<sup>7</sup> Finn Iunker, *The Answering machine*, 11



*My New View*

I'm here to prepare a presentation at the academy in April. To collect material and to interview a physicist about physics. But how to find a physicist?

I've send e-mails to the universities but receive no replies.

I've also been in contact with the Swedish Institute, but they only really work with archeologists and can't help me at all. I decide to call Dionysos, my classmate Benedikt's Greek contact. He is a taxi driver. I write a note where I look for collaborators for my MA project: an interview of 15-20 min about physics. Dionysos picks me up and we drive to a print shop to make some copies and then we go to the University and put the notes up there.



*National and Kapodistrian University of Athens*

I get no response.

The woman at the Swedish Institute, who is very friendly, contacts me and invites me to some mingle parties where she says she thinks I'll have a good chance to meet someone who can help me to find a physicist

The first mingle party is a release party for the publishing of the Greek translation of the Swedish children's books about Alfie Atkins (Alfons Åberg).

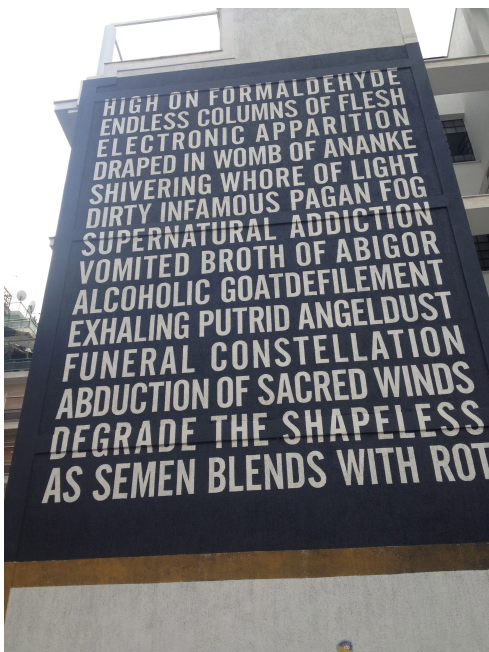
I get introduced to a woman who says she has a friend who is a physicist, "shall I call him?" She calls him and I get to speak to Alexis (who really is a mathematician, but also a physicist).

We decide to meet for lunch the day after.

The next day he picks me up in a car, with his big dog in the back seat, and drives me to a very loud restaurant where it's impossible to make any recording.

We make another appointment.

The Sunday after, I take a taxi to his house outside Athens, and he gives me a 40 minutes lecture on "three breakthroughs in human thinking", the foundation for my performance "14 Billion Years of Theatrical Physics".



*Other Athens text: wall writing in Keramikou*





The lecture performance: "That Greek Show", with excerpts from Alexis lecture together with other texts I read in this period, HSM April 2015.

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**2015-05-05**

### **COINCIDAL ENCOUNTER**

I bump into my old teenage friend Magnus Albrektsson, that I haven't met for 30 years. He is now the owner of the nightclub Park Lane at the Avenue in Gothenburg. We decide that I will do my final performance there.

I'm always interested in finding new spaces to do performance in. The night club is really an ideal location; an exiting room with sound and light that is empty many of the hours in the day. It has a certain abandoned atmosphere, and yet the expectations of the coming night hangs in the air.

I feel attracted by the idea of being in a night club, and in this specific night club which has been there for so many decades. There is something with the spectacular theatrical setting of a dance floor and the moving bodies, the physical attraction in the air... I can see my project taking shape in front of my eyes... I always wanted to do a performance in a disco – in the day time. In a room that will be transformed in a few hours – you can predict: bodies gravitating around each other, people falling in and out of love.

**2015-09-20**

## **THE ACT OF RETURNING / THE IRON SQUARE**

Imagine a city with about 500 000 inhabitants and seven hills.

Imagine that this city is situated on the west coast of the little northern country Sweden, and let's call it Gothenburg.

In this pretty, little city on the west coast of Sweden there is a square that we can call The Iron Square. This is a place that I always, in my whole future life, want to come back to.

I was here before I was born. In the Summer and Autumn of 1966, I was inside my mothers body when she was working there, acting at Folkteatern (the "Peoples Theatre").

I have been coming back ever since. I love this square.

We can count to four sculptures on our square. One is of course of our friend Stig Dagerman, the poet with his gloomy gaze, who died of arsenic poisoning in a hotel room in Stockholm, and then we have the big fountain by "a Strindberg", the niece to our celebrated author August Strindberg. But hey!... it's not Stig Dagerman... it's of course our poet and critic Dan Andersson – I got the cause of death right but the wrong name. Dan, who is famous for his song "Around the beggar from Loussa":

"There is something behind the mountains  
behind the flowers and the song,  
there is something behind the stars, behind my heated heart.  
Listen- something whispers, leads me, prays:  
Come to us, this earth is not your kingdom, not where you belong."

The other two sculptures are placed on the other side of the big muzzle of tram tracks and fences. There we find one sculpture of a demonstrating trio and one that depicts the harbour workers, as a memory from the days when this city was a ship-building city.

I was here as a foetus, I was here as a child to visit my mother when she was working at the theatre and I was here as a young woman when I myself started to work at the same theatre. I hung out there a great part of the 90-ies when I lived in Denmark and arrived here with the boat from Fredrikshamn.

This is where everything happened. I will always return.

**2015-09-30**

## **LOOKING FOR THE PHYSICAL FORCES**

The idea of Park Lane: the nightclub

How can I create a material that has a certain sustainability and quality for 20 minutes? 30 minutes?

Who can help me with this?

Prediction

Temperature based material?

To make physical theatre without using human bodies

Capture and share

Nothing is too simple

Gravity and strength

Divide the material into three sections: long-form essays ("Massive"), angry takedowns ("Pissed"), and adoring panegyrics ("Love")?

I am a camera

The distinction between depicting and expressing  
Newton

The answering machine/ Plato Dialogues/ Seinfeldt/ Plato Myths/Prayer to Acropolis  
Park Lane Setting Up: "in two hours..."

The physicality of a room

Dance as a means for sex and re-production

To feel/experience physical forces. Gravitation

Spaces that are left empty during daytime and only used in the night time

Is there an invisible link between physics and theatre/performance?

Theatrical physics

Gravitation and the concept of Katharsis

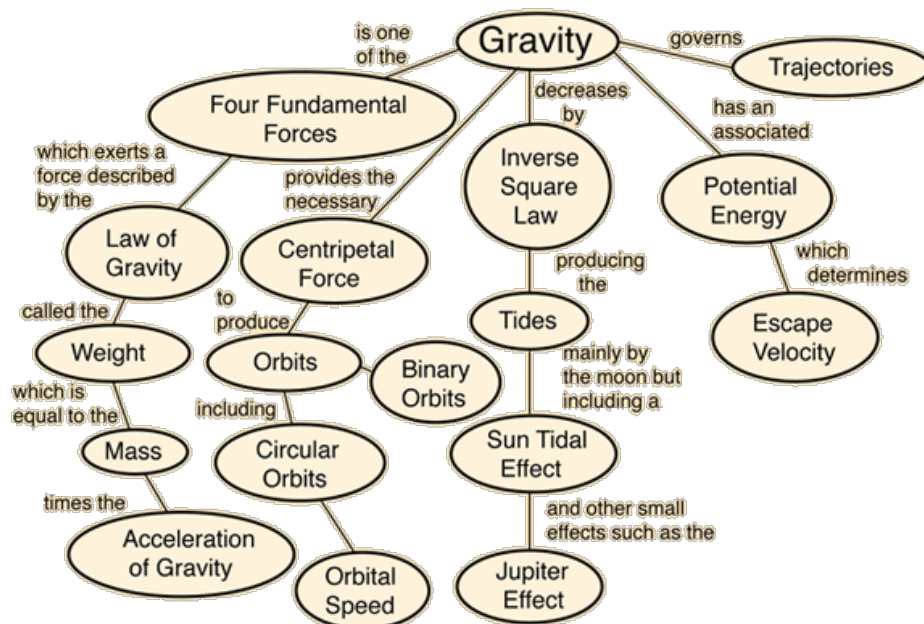
The different layers of physicality at a nightclub

Presence/absence.

Gravity or gravitation is a natural force by which all things attract one another including stars, planets, galaxies and even light and sub-atomic particles. Gravity is *responsible* for the formation of the universe.

Gravity has an infinite range, and it cannot be absorbed, transformed, or shielded against.

Keep focus!





2015-10-22

## PERFORMANCE!

- Our work is an exploration of the gap between the scenario of the dream and the boards of the live stage
- The themes we have returned to are love and fragmentations.
- There has been a long commitment to do work that asks questions and fuel dreams.
- A long commitment not to notice certain boundaries.
- Struggle to produce witnesses rather than spectators.
- To witness an event is to be present it in some fundamentally ethical way, to feel the weight of things and one's place in them, even if that place is simply, for the moment, as an on-looker.
- The territory between the real and the phantasmatic.
- At best, we say, the work (be it theatre, performance, installation or film) remains ahead of our thinking. It speaks of things that could not otherwise be spoken, it takes us somewhere. Less than that is simply not good enough.

These statements are all quoted from the first chapter in the book "Certain Fragments" by Tim Etchells,<sup>8</sup> the British writer, artist and member of the performance company Forced Entertainment and they serve as a great inspiration for how I would like to work.

WHAT?

HOW?

WHY?

My first encounter with Forced Entertainment was in 1994 when they attended a festival in Århus, organized by the school I attended at the time, with their performance "School of No Regrets". The performance was one of abundance and endurance, there was a lot of ink, chalk, water; materials that we also worked with at the time. We, being critical students, thought they were "ok". What mostly engaged us was their collective approach, the way they chose to work together. In 1996, I attended a lecture at De Montford University in Leicester where Tim Etchells talked about their method of working with texts. How they read and read and read.

I have followed their work throughout the years. The last I piece I saw was a live screening this summer of all Shakespeare's plays acted out with kitchen utensils. Brilliant. As always. They maintain a bright source of inspiration.

I bought the book *Certain Fragments* about 15 years ago and what still catches me when I read it is their high level of commitment to the work. The way they map the city, the situation. How they ask the right question in order to get an interesting answer. It is this kind of social approach and context that has had such an influence on many of us, both as practitioners and spectators.<sup>9</sup>

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<sup>8</sup> Tim Etchells, *Certain Fragments*. (London: Routledge, 1999), 1

After many years of working I have realised that an important part of the artistic process is, for me, searching for this actual situation that should be performed and explored. And in finding this core situation many different aspects play in: materials, objects, texts, encounters with people and places... The collaborative component is always there as I always collaborate with others. In my practice I believe that the territory between "the real and the phantasmatic" is of special importance.

As for most people, the years of my basic training (Nordic Theatre School, Århus, 1993-97) was extremely important for the development of my taste, source of inspirations, influences and knowledge. It was all new to me! I had never seen theatre like this before! I loved it! This was something completely different from the theatre I was brought up with! Forced Entertainment, DV8, Tadezs Kantor, Laurie Anderson, Verdensteatret, Baktruppen, Mother Board with Per Platou and Amanda Steggell, Odinteatret, Gilbert&George and many more. This is my education. This shaped me as an artist.

With my theatre background in Gothenburg, with texts and scripts, classics and contemporary - always plays – but also: ABBA, disco, skateboard, David Bowie, punk and evening classes in drawing and painting, it was a relief to discover this other side of performative art that RoseLee Goldberg describes in her book *Performance: live art from the '60s*:

*Indeed, the history of performance throughout the twentieth century showed performance to be an experimental laboratory for some of the most original and radical art forms; it was a freewheeling, permissive activity for intellectual and formalist excursions of all kinds that could, if studied carefully, reveal layers of meaning about art and artmaking that simply was not clear before. As such, it was a missing piece in the big picture of art history studies.*<sup>10</sup>

This kind of approach is also often labelled as post-dramatic theatre, with diverse sources of inspiration and non-linear structures as important features. Or, as Eva Brenner puts it:

*In contrast to traditional theatre, which since Greek drama has been oriented fundamentally to its texts, the 'post-dramatic' genre uses such diverse inspirations as visual imagery, music, dance, poetry, newsreels or oral histories for source materials. While favouring non-linear structures outside of ideological constraints, aesthetic 'practices of exemption' are meant to produce states of heightened perceptivity and overrule social norms and traditional theatrical principles of character, theatrical space, time, and story-line. Theoretically, 'post-dramatics' reflects the 'performative turn' of the 1990s and is indebted to new French philosophy with strategies of deconstruction, destabilised meanings and ambiguous constructions of identity ('simulacra')*<sup>11</sup>

It becomes clear that live art or performance art has been a place for experiments, artistic as well as social:

*Live Art could also be said to have paved the way, or at least offered a safe space to incubate different ways of doing things, for the expanded possibilities of theatre that we now see everywhere across the country, including in our*

<sup>10</sup> RoseLee Goldberg, *Performance: live art from the '60s* (New York: Thames and Hudson, 1998), 1

<sup>11</sup> <http://www.transform-network.net/cs/casopis/journal-132013/news/detail/Journal/transformance-as-a-new-genre-of-political-theatre.html>. 2015-10-01

regional theatres. *Forced Entertainment*, Neil Bartlett, *Rose English*, Gary Stevens and countless others who emerged from the intersections and edges of culture, were re-imagining what the staging of ideas, and the form and function of theatre, could be long ago.<sup>12</sup>



**2015-10-25**

**KEY WORDS / CONCEPTS THAT MAKES SENSE TO ME, HERE, NOW:**

Drama: interaction between man and nature

The autonomous actor/ the auteur actor.

To map the situation.

I belong to the Post Spectacular Tradition.

Theatre of/through objects/actions

Hard acting. Soft acting. Rhythmic acting

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<sup>12</sup> <http://www.theguardian.com/stage/theatreblog/2015/oct/22/live-art-the-research-lab-for-mass-culture> 2105-10-22

Ritual performance, visual dramaturgy.

Frontal/spatial

Slow motion. Expressions of time.

Para-theatrical. The inner screen.

Real Time.

The way we relate to knowledge. Copying, reference, citing, the idea of re-cycling.

Shared space.

The deconstruction of meaning.

*You get what you see and you see what you get!*

The Snake Dance. The Spiral Form. The Fusion.

Non-illusion. Megmatic mirror. Closed circuit.

The zero point in the actor: Emptiness on a spiritual level. To not be corrupted. Arrive at a point where you can create something new.

Creating the knowledge of physical attraction.

Catchment area: Combining the act of showing with the act of watching.

The production is operating together with the audience.

Installation situation.

The audience is turned into dancers.

A collage of senses. Eroticism.

Peripheral Theatre Machine.

Machinery: Machine as metaphor can also relate to the human mind as a landscape-driven machine with nature as a creative force, which can apply to the actors and spectators.

*My greengrocer also tells me stories.*<sup>13</sup>

*Thinking Dance*  
*Sitting there thinking*

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<sup>13</sup> Heiner Göbbels: <https://www.goethe.de/en/kul/mus/20455875.html>, 2015-09-15

*Sitting down dance*  
*Sit down*  
*Smoking dance*  
*Smoke a cigarette*  
*That's it*  
*Thinking dance*<sup>14</sup>

Curator Hans Ulbricht Obrist writes:

*Live art, self-evidently, moves away from the idea of art as the production of material objects. I learned from my long-ago conversation with Eugène Ionesco that a work like his play La Cantatrice chauve – which ran every night for forty years – could be as permanent as any work in bronze or marble. In this sense live art can also be sculptural. A key inspiration here is the duo of Gilbert and George, who more than any other artists, have explored this idea. They made a series of works in which they appeared themselves, as living sculptures, opening up a new form of artistic practice as a result.*<sup>15</sup>

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**2015-11-01**

## **COLOUR ME BLIND**

*A unique, precious blend of theatre and physics which rapidly penetrates the audience while strengthening and creating soft, seductive, perfection.*  
(with inspiration from a shampoo bottle)

Who am I?  
Where am I?  
What problem?  
What do I want to write?

- Is there an invisible link between theatre and physics?
- How might that come out?
- To have the courage to step out of the box, to have perspective:
- Connecting with and to the past
- Projecting into the future
- What are the connections? What use is this for somebody coming after?

Colour me blind. I'm a true believer.

Death as the ultimate gravity.

The philosophical aspect of gravity.

How to make physical force an independent actor in the theatre / performance space, with it's own dramaturgy, with the same weight as light, sound, set.

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<sup>14</sup> Liz Aggiss, *Anarchic dance*. (London: Routledge, 2006), 46

<sup>15</sup> Hans Ulrich Obrist. *Ways of curating*. (London: Penguin, 2014), 143

To collaborate with contemporary researchers in the field of physics such as applied acoustics and new materials.

Are you saying this to me? Also to myself. One should speak solely when also speaking to oneself. Only then is there a dialogue.

*A man sets out to draw the world. As the years go by, he peoples a space with images of provinces, kingdoms, mountains, bays, ships, islands, fishes, rooms, instruments, stars, horses, and individuals. A short time before he dies, he discovers that that patient labyrinth of lines traces the lineaments of his own face*<sup>16</sup>

Truths move in circles, around the same themes.

I find one of my old note books from The Nordic Theatre School, from a class with my master teacher Carlos Cueva:

*The work must go on like a ladder.*

*Art is totally abstract and completely concrete.*

*Truth until the last second.*

*It's important to have a repertoire of walks.*

*What you don't do must be inside what you do.*

*To break the resistance – to know yourself.*

*To be modern:  
to have a function  
the possibility to show experiments  
the possibility to do mistakes.*

*The vertical is the strong position. Horizontal is weak.*

I understand I have been working with the same theme for 25 years.

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<sup>16</sup> Jorge Luis Borges, "Afterword," *The Maker* (London: Penguin Books. 1960) 49

2015-11-05

## DOING LITTLE

A seminar I would have liked to attend at Giessen, Institute of Applied Theatre Studies: **Doing Less – Art and Passivity** by [Prof. Dr. Bojana Kunst](#):

*In the seminar we will examine the philosophical and cultural concepts of passivity and relate them to various artistic processes in contemporary performance and visual art. We will deal with the position and understanding of the contemporary artist and observe the ways the philosophical understanding of passivity can influence the reflection about the artistic work, creative processes and social role of the artist. We will study several philosophical concepts (by example Levinas, Agamben, Blanchot) and analyse artistic manifestations, which celebrate the passivity and other similar concepts (laziness, stillness, doing nothing, boredom, waiting, etc.). How is passivity related to the prevailing aesthetical concepts, which were in 20th century circulating around 'doing less', reduction, chance, minimal gesture, delegation? Even if in its recent history performance is always strongly related to the act of doing, the passivity can open another insight into the practice of contemporary performance.<sup>17</sup>*

"As in the case of *weightless* – "having little or no weight" (*American Heritage Talking Dictionary*); "having little weight: lacking apparent gravitational pull" (*Merriam-Webster Online Dictionary*); "having or appearing to have no weight" (*Cambridge Advanced Learner's Dictionary*) – and notwithstanding the dictionaries, we should not understand the suffix *-less* in *voiceless* and *motionless* to basically mean "without; lacking" (*American Heritage Dictionary*); we should rather take *voiceless* to refer basically to someone who has less voice but never no voice, and *motionless* to basically refer to a worldly living human, animal or object that can have less motion but never a *dead stop*, the body may undergo in the altered states and realms of dance and death.

What's happening to me is too big for me, every morning I really mean to say, 'what's happening to me is too big for me, because that's joy. In a certain way, it's joy in the pure state.'<sup>18</sup>

Keep focus!

*The theatre of methodology*  
*Outline of a theory of practice*  
*The self as a centre of narrative gravity*

These are titles from the artist Magnus Bærtås exhibition *The Strangest Stranger* at Gothenburg Art Hall, March 2016. I once "impersonated" or spoke his transcribed words in a performance at Konstfack.

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<sup>17</sup> <http://www.inst.uni-giessen.de/theater/2015-11-01>

<sup>18</sup> Jalal Toufic., *Two or three things I'm dying to tell you*. (Sausalito, California: The Post-Apollo Press, 2005),

*Up, Down, Top, Bottom, Strange and Charm* are the six flavours (or types) of quark: the elementary particles that make up every atom, and the fundamental building blocks of matter. They are also words that captures my imagination when put in that order and combination.

Physicality being the key to affective response.

*“Landscapes, panorama, geometrics and light become the dynamic elements rising up the hierarchy of stage signification. If dramatic theatre is ‘subordinated to the primacy of the text’ and the ‘making present’ of speeches and deeds in the mimetic space of the stage, then post dramatic theatre is theatre without text.”*<sup>19</sup>

2015-11-10

## LET NO ONE IGNORANT OF GEOMETRY ENTER THIS ROOM

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### **Poetic Science**

Poetic Science offers a way of being in the world that celebrates relationship and connection. It crystallizes a broad approach that I have developed in my life and work. By combining the perspectives of art and science it moves to unify what is commonly thought of as separate. Through this fusion of body and mind, heart and head, matter and spirit, we are able to enter into a more intimate relationship with materials. And, having learned to distinguish their characteristic rhythms, ask them each to lend their unique personalities to the expressiveness of our work.<sup>20</sup>

### **How to Avoid Yourself**

*Every Sunday morning you go for a walk in the city, heading nowhere in particular, with just one rule to your rambling: You never retrace your steps or cross your own path. If you have already walked along a certain block or passed through an intersection, you refuse to set foot there again.*

*This recipe for tracing a loopless path through a grid of city streets leads into some surprisingly dark back alleys of mathematics—not to mention byways of physics, chemistry, computer science and biology. Avoiding yourself, it turns out, is a hard problem. The exact analysis of self-avoiding walks has stumped mathematicians for half a century; even counting the walks is a challenge.*<sup>21</sup>

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<sup>19</sup> Hans-Thies Lehmann, *Postdramatic Theatre*, trans. Karen Jürs-Munby (London and New York: Routledge, 2006), 2.

[www.performanceparadigm.net/index.php/journal/article/](http://www.performanceparadigm.net/index.php/journal/article/)

<sup>20</sup> Daniel E. Kelm: <http://www.danielkelm.com/core/poeticscience/2/1>, 2015-11-08

<sup>21</sup> Brian Hayes: <http://www.americanscientist.org/issues/pub/how-to-avoid-yourself>, 2015-11-08



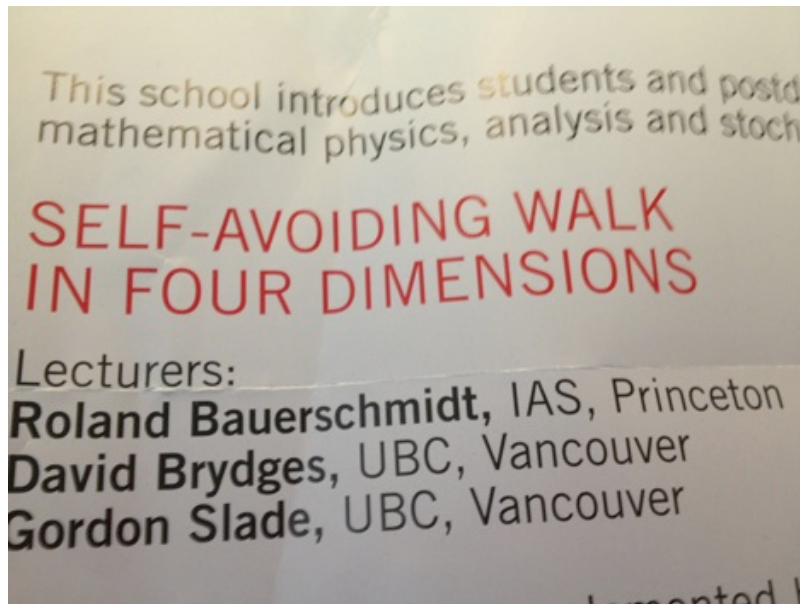


Photo taken by me at Trinity College, Dublin during a visit in July 2014.

**2015-11-10**

**FICTION AS METHOD / CHANCE AS METHOD:**

I am an artist, and therefore a liar. Distrust everything I say. I am telling the truth.

It seems to me that I am walking about in my sleep, as though fiction and life were blended.

When Thomas More's *Utopia* was first published in 1516 it was taken so seriously by some members of the church that the possibility of sending missionaries to convert the godless population of the imaginary island was discussed. Even if no missionary set sail, the incident reveals how a fiction might have real and unexpected effects on a world it seemed to distance itself from.

Perhaps the effect most readily associated with fiction is a feeling of escape, a flight from this world into another. Yet beyond escapism, fictions are an operative part of everyday life, whether it be in the dark foundations of currencies and nations, or as the founding gesture of movements to freedom, lucidity and the creation of alternatives to what "is".

THE ITALIAN EXPRESSION *se non è vero, è ben trovato*—"even if it is not true, it is well conceived." In this sense, anecdotes about famous persons, even when invented, often characterize the core of their personality more appropriately than the enumeration of their real qualities—here also, truth has the structure of a fiction.

2015-11-11

## THE ACT OF RETURNING, AFTER HAVING EATEN THE APPLE OF KNOWLEDGE

Connecting as well to the (still to happen) sculpture-performance "The Tipping Point" and to the Practical Presentation that I will do (not "have") in February – and the texts that evolves around these two years and this process.

And my reflections on theatre, performance, performance theatre, TAETER, theatre performance, lecture performance, performance lecture - and so on!

It also involves a little bit about Returning.

In a very big circle.

The nostalgia of the moment of eating the apple of knowledge/mortality.

Hvitfeldtska College. Who was I at that time? I remember. We had dreams, about the future "within the theatre". Light spring evenings as a teenager in Näckrosdammen, skateboard, Ebba Grön. Who was I then? 14-15 years old? What was I thinking of myself and the future?

*When Adam ate from the fruit from the Tree of Good and Evil, he become dead, but he was still living. He was living at the same time as he was being dead. He became a cadaver, from the word CADA meaning to fall.<sup>22</sup>*



A project: something projected to the future, i.e. not now.  
To be forced to live in the future of possible performance is to live under the production slavery of capitalism.

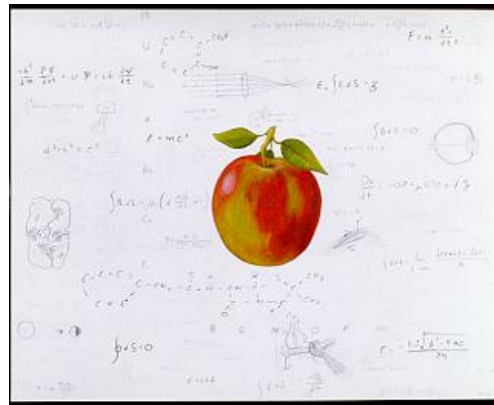
I get nostalgic. About the times when we where young and stood on the ferry from Denmark, soon to arrive in what we use to refer to as "Hell City", our home town. Ever so difficult place to explain to someone who doesn't want to listen. About the time when we were young and wanted to make what we called at the time, before we knew the concept of "platform", an "umbrella" for other people to join in, to perhaps do something like the concept of Henning Mankells theatre in Mozambique; the bakery-theatre. The theatre is run by the baking and selling of bread.

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<sup>22</sup> Poet Jalal Toufic at the PARSE conference in Gothenburg, Nov. 2015

Could't we have a bakery? While the bread is rising, we could have a workshop, working with a piece, rehearsing, or whatever.  
To have a good life with and within the art.

To be in this city is overwhelming to say the least.



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**2015-11-21**

## **MEMORY THEATRE**

I read Simon Critchleys' "Memory Theatre" on the train.  
I want the Park Lane performance to connect to the idea of a memory theatre.  
I went to the "Knowledge Café" at Chalmers. Met Per Olof.  
150 grey haired physicists. Hot water, instant coffee or black currant tea bag. Bread, butter cheese and two toasters. Tea and toast.  
Bread tastes better when heated up.  
They are not very good at aesthetics, but they do know their physics.

Meeting with Olle (Petersson). He agrees to help me to do the radio-thing. A live fm broadcast. On the conditions that I will make an attempt to develop his technique.  
Adding something new, and that will be to do it live.

He also wants me to use more voices. Per-Olof? Tim? What should they say? How do I want it to sound?

Also, important to be clear with Olle, and not to be mesmerised by his face. (Burka?)

The risk and pleasure and social intervention of bringing other people into the Thing: all the people that I will have to deal with and make engaged to help me.

Allow myself to get lost and messy in the world of physics and night clubs.  
This is only one slice of the cake.

Let's cross fingers!

Would be nice to see the radio waves!

Could I bring in *The Weather* in this? Using sound effects. Amplify the weather machines?

Use rain? Thunder and lightning?

Have to very soon get in contact with The Technician at Park Lane!

What can we do? What can be done?

To create a pulsating pattern of "the Koch snowflake" with nightclub light?

To use the method of Kaisa Warg: "you take what you have"?

To put together everything that has meaning for me, to combine all thoughts and things, and see what might come out of it.

The dance-lecture:

Dance slowly. Use the dance in order to tell something. To experience. The presence in the room. The physicality of bodies moving. The minimalistic music. Let the heart lead. The chest part of your body. Where Aristotle places the Spirit. Full of Star Dust. Communicating with the Other. The easiness in Speech. Preciseness of rhythm. Presence of Rhythm.

To find a way to *cope with scientists*.

How to find a common language with concepts that we can use to understand each other?

To get across to people, to collaborate.

To be right in the middle between preparation and improvisation. To prepare but always leave something open.

People. What will they bring to the project? Good and bad?

I read about the Memory Theatre, Camillo is the man who invented, or constructed it. The renaissance. Venice.

*The objective knowledge we do have (of the memory theatre) can be summarised very briefly. The structure was a wooden building, probably as large as a single room, constructed like a Vitruvian amphitheatre. The visitor stood on the stage and gazed into the auditorium, whose tiered, semi circular construction was particularly suitable for housing the memories in a clearly laid-out fashion - seven sections, each with seven arches spanning seven rising tiers. The seven sections were divided according to the seven planets known at the time - they represented the divine macrocosm of alchemical astrology. The seven tiers that rose up from them, coded*

*by motifs from classical mythology, represented the seven spheres of the sublunary down to the elementary microcosm. On each of these stood emblematic images and signs, next to compartments for scrolls. Using an associative combination of the emblematically coded division of knowledge, it had to be possible to reproduce every imaginable micro and macrocosmic relationship in one's own memory. Exactly how this worked remains a mystery of the hermetic occult sciences on which Camillo based his notion.*<sup>23</sup>

Physics seem to be the concretization of *Huge Ideas*.

Reading Frances Yates' *The Art of Memory*.

Wouldn't it be great to try to construct a Theatre of Memory?

*I'm much more interested in what, well, what you're gonna be feeling in a situation where you're up on stage with an audience or with someone else and an audience, y'know, and what that live environment will yield with everyone present. That's the situation at hand and so let's deal with that situation and not try to invent another one.*<sup>24</sup>

*Audiences get so much information from just looking at live human beings, which is a unique opportunity that theatre provides, and we combine that with the words they're saying. There's this synthetic process that happens in our brains we're usually not even aware of. I think it's important to be mindful of how much the viewer can make out on their own.*<sup>25</sup>

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**2015-11-30**

## **THEATRICAL PHYSICS?**

(For feed-back session with Mary Cobble)

The projects starting point is a collaboration with Chalmers: the performance-sculpture "Tipping Point" which I will talk more about in my "written project".

In the practical project I will allow myself to enter the world of physics in a totally subjective, messy and romantic manner.

I want the audience to get a Feel of Physics; gravity, radiowaves, strength.

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<sup>23</sup> Peter Matussek: <http://www2.idehist.uu.se/distans/ilmh/Ren/soc-memory-camillo.htm>, 2015-11-20

<sup>24</sup> Richard Maxwell: <http://www.realtimearts.net/article/issue69/7815>, 2015-11-20

<sup>25</sup> Richard Maxwell: <https://www.tdf.org/stages/article/1283/its-your-job-to-figure-it-out>, 2015-11-20

My practical project will be divided in three parts and will use the subject "physics" as means to create a performance piece.

The first part is a sound walk with fm radio transmitters and receivers. The audience has a head phone each, with a radio receiver and through the transmitters they hear sound, text, maybe instructions. The receivers will react to other bodies in the room and each person will get a different experience.

This is a collaboration with sound artist Olle Petersson.

I will (try to) send live. The texts will be fragmented voices from near and afar.  
I will use december to find out exactly what to say,  
And exactly how to do this, to send live. It will be a very small radio broadcast.

The second part is a performance lecture. It will be a little about physics, but also about passion. Here, I collaborate with a retired professor from Chalmers, Per Olof Nilsson, who now runs a museum of physical experiments here in Gothenburg.

The third part, I hope, will turn into a group dance!  
With the use of instructions in the headphones, through the radio signals, my intention is to create a desire to join in the dance. I will also use the light and sound system at Park Lane to make geometric patterns in the room, and there will be some kind of objects (that I might want to make auto-movable,).

**2016-01-15**

## **MY PRACTICE**

I was trained in the tradition of physical theatre, at the Nordic Theatre School in Århus, Denmark. My main teacher was the Peruvian director Carlos Cueva from the group LOT in Lima. Our main influences came from Japanese Nôh theatre, Jerzy Grotowski, Tadeusz Kantor, Robert Le Page, Robert Wilson and Odinteatret. When finishing the school, I, together with Håkon Lindbäck and Martin Lundberg started a group called Force Majeure. We did performances and installations between 1997 – 2006 in a broad range of venues; theatre spaces, art galleries, public spaces and museums throughout Scandinavia.

### **Now:**

My artistic practice is situated somewhere in between the immaculate planning and the chaotic situation of what became of this planning.

Visualization; imagining the result. And then: act in the moment.

There is rarely time for rehearsal.

In my artistic practice, I spend a lot of time doing research. To read and look for anything that has a connection to the subject I'm working with. To combine words and concepts to create friction.

I often use transcriptions as texts. There is something with them that I like. To mimic. Take another persons spoken words in my mouth. To impersonate. Pronounce. There is something profound about it.

When dealing with the concept "Theatrical Physics", I have been looking into subjects like physics, obviously, both applied and theoretical; gravitation, electro magnetic fields, radio waves, radio broadcasting, theatre, the art of memory, the power of colours, etymology and mathematics.

A big part of my practice is also to find collaborators from the field I am working with, in this case it involved physicists, sound artists and a night club owner.

I like to consider my practice as a merge of different ingredients. Like cooking. What happens if I mix theatre and physics with the concept of "the night club"?

In other works I have mixed texts from Brechts "He who says Yes/ He who says No", with the model opera "Taking Tiger Mountain By Strategy" and early Internet correspondence with the dissident novelist Shi Tiesheng. ("36 Hearts Turned Toward The Sun", Masthuggsteatern, Gothenburg, 1998).

In the piece "Falling Dark, 1000 mountains" (Torshovteatret, Oslo, 1999) we merged the story of the war in Rwanda between huties and tutsies and the story of the soon to be extinguished gorillas that live in the mountains there, with texts from Margerite Duras, Staffan Göthe and extracts from Henning Mankells Wallander books, to create a dark and hollowing atmosphere dealing with colonialism and exploitation.

In my project at HSM, I have worked with ingredients like: language, oral tradition, mimicking, the ancient Greece, humour and dance.

**This is how I am. As a person, as a performer and as a maker of performance:**

I am messy and structured. I'm nostalgic and restless.  
I'm ambitious and lazy. I'm fatalistic and stressed. I'm concerned and destructive.  
I am slow and fast. Cold and crazy.

I have worked with theatre since I graduated from college. 1983. That makes 33 years this year. I started at the office at Folkteatern here in Gothenburg, typing stickers for the information papers. I moved on to prompting, propping and later acting.

I recently got the question if I thought, and how, the theatre had developed through these years.

It's an interesting question. It's hard to tell. In a way – of course – the possibility to make the kind of work that I want to do (i.e experiments, non-psychological, montage-like performance) is much bigger now than it was 10-15-20 years ago. But before that...the 60-ies...were quite swinging, I guess...My mother, who is an (retired) actress claims that having worked with theatre in the sixties, you just can't be shocked by anything you see on a stage these days!

And of course it has to do with theatre being the art you write in sand. There are no remains, apart from maybe some blurred photographs.

I think the theatre moves in circles, like everything else. It's very in tune with time and society. And even though you nowadays can see a lot more experimental theatre (than in the 90-ies and early 00-ies), I think that the work now is, again like everything else, much more individualistic and much less concerned with the collective, which was such a big part of us and what we wanted to do when we started out in the 90-ies; that we were a group.

### **Currents:**

It seems to me, from talking to artists, audiences and looking at programs for festivals and what goes on in social media, that Live Arts, to see an art piece LIVE, is something that has started to be more popular and probably will continue to grow in the near future.

Everything moves in circles and responds to previous times. It seems to me that the concept of "Live", i.e theatre, theatre performances and so on, has been slightly out of fashion for the last, say, 30 years. It was considered un-hip to work with live art. Visual and digital art was in the forefront.

However, this seems to be changing!

I really believe that live art is moving into popularity. People, young and old, starv for "real "experiences. They crave for the experience of sharing a piece of art together with others. To feel part of a collective.

I also believe that the way of working is about to change and that artists long for collaborations and collective experiences .



**2016-01-16**

### **INFLUENCES / INSPIRATIONS/ ASPIRATIONS**

**Forced Entertainment:** British theatre group, founded in 1984 in Sheffield.

"The work we make tries to explore what theatre and performance can mean in contemporary life and is always a kind of conversation or negotiation, something that needs to be live. We're interested in making performances that excite, challenge, question and entertain other people. We're interested in confusion as well as laughter."<sup>26</sup>

*For their non-compromising collective work, mix of seriousness and humour. I have followed their work since 1993 when I saw "Club of No Regrets" in Århus.<sup>i</sup>*

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<sup>26</sup> [www.forcedentertainment.com](http://www.forcedentertainment.com)



**Verdensteatret:** "Their works are presented widely international in different art contexts and locations, such as art galleries, contemporary music festivals and theatres. They have developed a unique and complex audio-visual style, where sound spaces mingle with sculptural scenography and stories of the fragile human soul."<sup>27</sup>

*For their ability to merge visual art and theatre, for how they work with spatiality, multiculturalism and for their methods of collective creation of work.*

**Laurie Anderson** is an American experimental performance artist, composer and musician who plays violin and keyboards and sings in a variety of styles. Initially trained as a sculptor, Anderson did her first performance-art piece in the late 1960s. Throughout the 1970s, Anderson did a variety of different performance-art activities.

*Her way of working with sounds and new technology has been a source of influence ever since I first heard and experienced her sometimes in the 90-ies.*

**Experiments in Art & Technology (E.A.T.)** was founded in 1966 by engineers Billy Klüver and Fred Waldhauer, and artists Robert Rauschenberg and Robert Whitman to provide artists with access to new technology. E.A.T. matched artists with engineers or scientists for one-to-one collaborations on the artist's specific project. E.A.T. initiated large-scale projects such as *9 Evenings: Theatre & Engineering*, a series of performances that took place at the 69th Regiment Armory in 1966 incorporating new technology. The *9 Evenings* featured performances by John Cage, Lucinda Childs, Öyvind Fahlström, Alex Hay, Deborah Hay, Steve Paxton, Yvonne Rainer, Robert Rauschenberg, David Tudor, and Robert Whitman.<sup>28</sup>

*Truths move in circles. I only found out about this work a while ago. This is the 60-ies and, in my eyes, it still looks modern, new and experimental. I get both touched and frustrated when I read about the things they did. So much knowledge is forgotten.*

**Tadeusz Kantor** (1915-1990) "was once called 'the best artist of the world from amongst Polish artists and the most Polish one from amongst artists of the world'. Already during his life, some considered him a genius, and others a master of mystification or a clever imitator only. Today, no one should doubt that this artist, who passed away in 1990, was one of the greatest creators of the art of the twentieth century. Even though it is difficult to explain what the phenomenon of his imagination was based upon. He was a versatile artist; a "total" one as he used to say, thus it is very risky to divide his output into individual "disciplines". Being a painter, stage designer, poet, actor, and happenner, he made a name for himself as a man of theatre, but even in the domain of it he remained first of all a painter who thought with images and used actors and props instead of paints."<sup>29</sup>

*The weight of Kantor's stage-pictures / images, the seriousness and beauty in which area he worked. I don't think I ever will be able to create something that would have even some resemblance of his work, but I use his work as a kind of shower sometimes, to get rid of the superfluous.*

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<sup>27</sup> [www.verdensteatret.com](http://www.verdensteatret.com)

<sup>28</sup> <http://broadway1602.com/artist/experiments-in-art-and-technology-e-a-t-archive/>, 2016-01-16

<sup>29</sup> <http://www.cricoteka.pl/en/>, 2016-01-16

## VISIONS:

I would like to find collaborators throughout the world who want to investigate and inquire into what "Theatrical Physics" might be. Engineers, physicists, researchers in the fields of applied physics, theoretical physics, new materials and applied acoustics, for example, who wish to test their research on a live audience and in a theatre framework – presented as a performance.

Ultimately, the project aims to identify and experiment with work that may have the capacity of reaching wider audiences, initiating discussions and potentially influencing attitudes about how the theatre can merge with scientific subjects and new research to expand its field.

I'm interested in doing work that has a strong kinship with theatre. It might not look like theatre and might not have actors on stage but it definitely derives from theatre. Bertolt Brecht said at some point (unfortunately, I don't remember when and where I heard it) something that I often quote and love: "We are going to make a new theatre! It might not look like theatre and actually it doesn't even have to be called theatre, we can for example call it Thaeter!"

I imagine different approaches to what Theatrical Physics can be:

- Similar to "14 Billion Years of Theatrical Physics", a performance lecture ABOUT physics and it's impact on our lives.
- An experimental lab-situation with new technology, using the stage for live experiments.
- A visualization of research concerning new materials.

What I don't want it to be, or what I am not interested in doing:

- Tom Tits-like experiments for children and young people, this kind of one-to-one scale, often very un-aesthetic objects that in a "playful" way intend to make children understand physics.
- Circus-like performances, where you as an audience are supposed to watch, marvel at and enjoy virtuosity.

And WHY do I want to do this:

I believe that by using a non-psychological subject like physics, one can expand the notion of theatre because it allows oneself to be more abstract and still talk about something that has an impact on our lives and the way we conceive the world. I also believe we can do work with a spiritual aspect through physics.

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**2016-01-31**

## **THINGS I LEARNED**

Things I learned during that first period of 2016 in Gothenburg:

I skip the radio idea. I don't want to feel dependent on Olle.

Visited Park Lane together with Virgil, my "second tutor".

Daniel, the technician, is fine.

We looked at possibilities with the lightning system. There is a beautiful movement of the lamps when they wake up, like dinosaurs.

There are fantastic possibilities with the light. The problem is only that I don't have any conception of how much time I will be able to be there and to what extent I will be able to experiment with the system.

I booked the venue through Daniel Brookes. Thursday 11th Feb and Wednesday 10th.

I transcribed the text "14 billion years" and decided that this is the text that I want to use for the presentation.

I listened to the tune at Wolfgang Tillmans exhibition again:

*Make it up  
as you go along.*

Bowie is dead.

Bowie –

Radio, internet, Bowie all over.

Where are we now?

I recorded the Tillman disco tune at the exhibition at the Art Hall and sent it to Dieter.

I went to the restaurant Lipp at the Avenue, they played "soul-lounge music" there, and I decided to use that for the headphone part.

Don't know what to read, don't know what to write, I just want to work on the floor, preferably with people that also feel responsible for the result!

So, finally, I get the go ahead to work with the technician Tommy, after nearly two months!!! I can start to work with him and get somewhere! We will only get as far as I

have in my head. Had we started say, 4 weeks ago, we could have had a process... now it's only directions, decisions.

Recording at the school, in a proper studio after all, with Tobias.

Meeting with Daniel at Park Lane tomorrow.

Things seem to be under control.

I'm thinking:

Theatre + Nightclub = Physics

or:

Theatre+ Physics = Nightclub

This phase is interesting. Slow, stressful, exhausting, fantastic.

After having a cold and having to deal with the worst of weather, every day, getting frozen every day and just getting worse and worse and nobody had the time to do the disco tune and I just felt so tired  
Had huge doubts, I thought: Why? Why am I doing this physic thing?? *What is this?*  
This is just silly and boring!

And I start to clean. Clean away the books and the research material. There is no space left. This is what it will be.

It's a sketch. A try out. There will be things there that I can develop. There will be some kind of material.

"My entire career, I've only really worked with the same subject matter," Bowie said in a 2002 interview. "The trousers may change, but the actual words and subjects I've always chosen to write with are things to do with isolation, abandonment, fear and anxiety all of the high points of one's life."<sup>30</sup>

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<sup>30</sup> <https://www.theguardian.com/music/2016/jan/11/david-bowie-death-worldwide-tributes-death-work-of-art>, 2016-01-11

**2016-02-06**

## **GETTING THERE**

Picking up the weather machines from the containers.

Hard horizontal rain in Frölunda Industrial Area.

Managed to get the objects into Park Lane in the end. I was stubborn,  
It worked.

Per Olof and Kjell came with the fire-tube.

Tim came and all seem to be all right.

Now it's just me having to – believe in it!  
Superstitions in the theatre world.

And then:

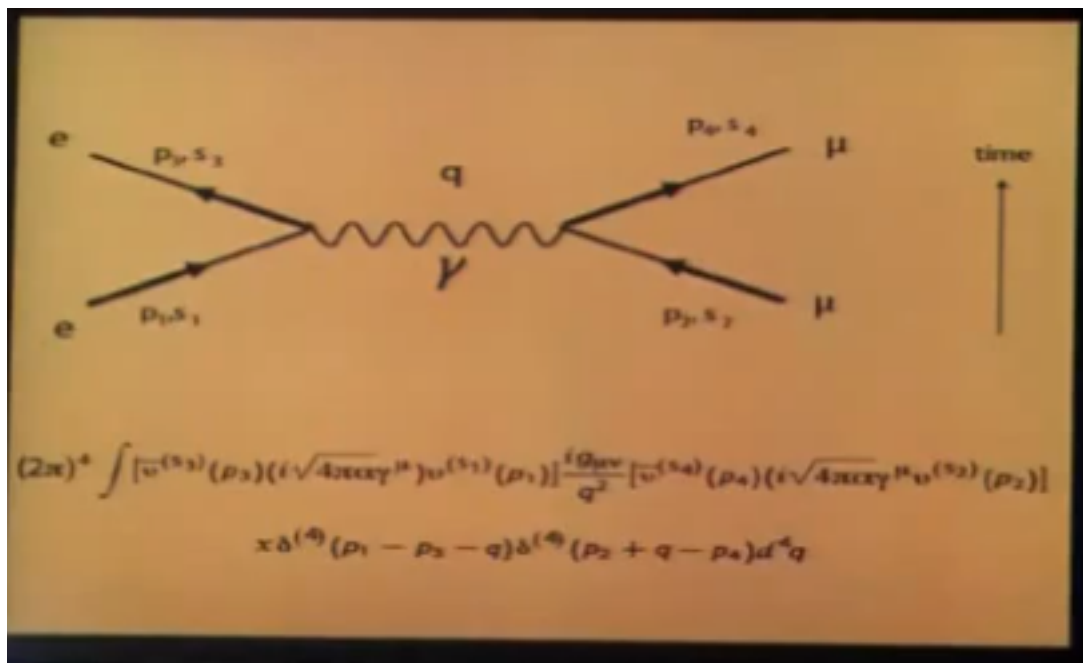
I like stepping on to the stage at Park Lane! I love to be in that space! I'd like to live there!





## CHAPTER THREE

*This is what we know. The presence of light rain. When it rains lightly.<sup>31</sup>*



<sup>31</sup> Finn Iunker, *The Answering Machine*, 17

**2016-02-14**

## **14 BILLION YEARS OF THEATRICAL PHYSICS**

And the emergence of the collaboration with physicist P-O Nilsson.

It all started with that performance-sculpture – *Tipping Point* – developed in collaboration with the Department for Applied Physics at Chalmers in Gothenburg. This involved me in the world of physics, with calculations, strength and gravity.

I am an actress. I was trained in "physical theatre" which meant for me "working with the body." Later I came to realize that what interests me are the actual physical forces. Gravity, balance / off balance, speed, strength, time, space and so on.

I started to think: "what if you swap it around?"

Theatrical Physics...what might this be? It is an intriguing thought!

In April 2015 I spent a month in Athens, Greece, to make research about the concepts "theatre" and "physics". I interviewed a theatre director and a physicist/mathematician.

I went to meet Alexis, the mathematician, to make the interview at his house outside Athens on a Sunday afternoon. When I got there he had prepared a lecture, a monologue, about "three great breakthroughs of human thinking": 1/ the student of Pythagoras who proved that there are other numbers, irrational numbers; 2/ the discovery – or creation – of the mathematical calculus by Newton and Leibnitz and, finally, 3/ the so called Big Bang theory from the mid 20<sup>th</sup> century.

I was overwhelmed!

Later, I decided to make Alexis' lecture into a performance called "theatrical physics". I transcribed his words and worked with his intonation to make it as identical as possible –like a mimicry.

I see this is an act of oral tradition.

In the summer of 2015, I mentioned my idea to a friend who said: "you must meet my dad! He's a retired professor in physics and runs a museum at Chalmers in Gothenburg called 'Fysikaliska leksaker' – Physical Toys". I mailed his father and told him about my project with theatrical physics and received an immediate answer: "Cecilia! We must meet!"

I went to see Per-Olof Nilsson at his museum where he and his assistant have designed more than 300 "toys" that visualize physical experiments and principles. I was thrilled and we agreed to do something together.

After some thoughts, I realized I wanted to use some sculptures /weathermachines that was made for "The Tipping Point" and was stored in a container in an industrial area outside Gothenburg.

At this point, I also knew I wanted to do the performance at the nightclub *Park Lane* in Gothenburg. I was curious to explore what could come out the mixture of three so disparate arenas like theatre, physics and a nightclub.



In order to keep the audience in a "performance mood" as soon as they entered the nightclub, I decided to use headphones with a pre recorded material that I constructed out of random notes that I had done about physics concepts; "the condensed idea about circuit theory, the expanding universe, wave transgression" and so on, mixed with a "soul lounge" tune.

The last ingredient to add was the Disco Tune. Since I wanted the performance to end up in a group dance. I knew the refrain that I wanted: "dance, dance the dance, dance the physics dance", and I wanted it to be stupidly simple and insisting, similar to the artist Wolfgang Tillmans "make it up as you go along" tune that was used in his exhibition at Göteborg Konsthall (sept 15-feb 16) and I contacted the composer Jacob Svartengren at HSM, who made the tune for me.

On the 10<sup>th</sup> and 11<sup>th</sup> of February 2016 it was time for the performance. The image below gives an idea of what it looked like:



Per-Olof and Kjell, his assistant, had constructed a *fire-tube*, a metal pipe with holes connected to a gas tube with a kind of membrane in between, that they "played" on. At the end of the performance I had a little talk with P-O about his love for physics. As of a lucky coincident, our second show took place on the very day the gravitational waves were deducted for the first time in history. We included the sensational discovery in our conversation, arousing an improvised applause that celebrated the gravitational waves and Einstein's predictions! (See video.)

My performance lecture at Park Lane in Gothenburg, 10<sup>th</sup> and 11<sup>th</sup> of February 2016.



The program:

## **14 BILLION YEARS**

14 billion years of theatrical physics!

There is a storm coming.

Be there!

The nightclub is in your head.

Today I shall talk about a very small part of physics history that has literally changed the world and our concept of the Universe.

I shall choose some points that have changed our way of thinking .

Three breakthroughs in human thought.

It's about gravity, predictions, scale and expansion.

For some time now, I have considered the concept of theatrical physics.

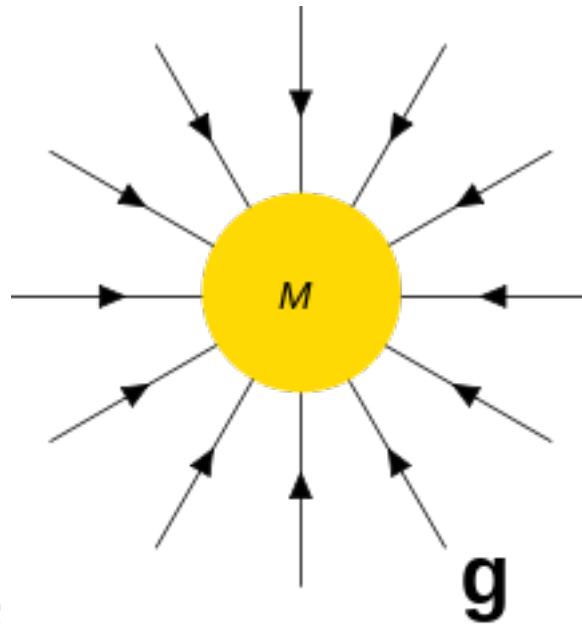
What might that be?

I know physical theatre because it was my training,

But what is theatrical physics?

What might it be?

I'm not sure I'm getting any closer with this performance, this little slice of the cake that we call the *practical presentation* at HSM, but nevertheless, it's an attempt. It's my first attempt.



**It's a call out!**

**My performance is approximately 60 minutes and consists of three parts: a sound, a text and a tune.**

**It strives to connect with the tradition of *memory theatres* – the 14th century concept of using the theatre format as a vehicle for knowledge.**

**The performance also seeks to act in realms beyond *good* and *bad*.**

**The performance text is based on a conversation with Alexis, the Greek mathematician, on a Sunday afternoon outside of Athens.**

**It's all about gravity. Gravity and strength.**

**Starring:**

**Per-Olof Nilsson**

**Kjell Sedig**

**Tim Greenlee**

**Cecilia Runesson**

**Sound:**

**Tommy Karlsson**

**Sound design for the storm:**

**Emilia Odelberg**

**Light:**

**Daniel Björnarås**

2016-02-13

## AN INTERVIEW WITH MYSELF

CR: So, Cia, did you achieve what you wanted by doing your *14 Billion Years*?

Cia: Both yes and no! As for the form, I don't think I managed to reach anywhere; it was a pretty traditional set up – almost a stand up – situation: me and a microphone. I didn't manage to do any of the things I wanted when it came to *feeling* and *experiencing* physics. This was partly due to the lack of time I had to set my things up at Park Lane, but also that my intentions changed when I decided to work with P-O and to use Alexis' text as a base.

However, on the other hand, it felt like an achievement doing it at all. For once in my life, manage to accomplish a performance on my own, taking full responsibility, making all the decisions by myself. It was hard but it was also thrilling and rewarding.

One unexpected result was that, by transcribing and speaking Alexis text and learning it by heart, I started to understand physics. I could feel the *weight* when I was speaking, for example, the sentence "and the universe is still expanding, and there is no centre in this expansion", or "not only all the stars that we see, but all the millions of stars that we don't see", or "we expanded in all directions; good and bad", or "human intelligence didn't always exist", and so on. It made me understand and think a lot about these things. So, in that sense, I *felt* and *experienced* physics.

Another thing: As I was watching the press conference on 11<sup>th</sup> February 2016 after they had deduced the gravitation waves, I noticed that the physicists spoke like I did in the performance, as if they were my colleagues. I guess this is what you call "fake it 'til you make it".<sup>32</sup>

CR: But do you think you got any closer to the concept of "theatrical physics"?

Cia: In some sense. I think of this performance as a sketch, an outline, of how I can use the theatre format to talk about my subject, and how I can use different elements from the theatre field, like sound, light, music, dance and be free to mix it the way I like and how it suits my purposes. But what I would really *like* to do is to fill the space with physical force, like gravity, and to work closer with researchers in this field who wish to explore the concept of *theatrical physics* together with me, in order to find out what it might be. Another word I like is *informance* – a performance intended to be both educational and entertaining.

CR: Have you got any thoughts on the staging at Park Lane?

Cia: Yes, the stage there is small, and I loved being on it, with all the lights coming at me, but one thing I realized was that I was so high up with the audience below me, which is really a strange thing! I don't think I've ever been on a stage like that, it's so out of fashion and counter productive to be *on top*, and I think this contributed to the feeling of despair I had sometimes up there, on the stage, looking *down* on the faces. Nobody was laughing, and I think my position had to do with this. It's almost impossible to get contact.

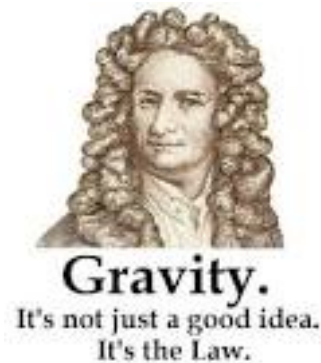
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<sup>32</sup> (Press conference: Gravitational Waves Detected 100 Years After Einstein's Prediction  
<http://mediaassets.caltech.edu/gwave>)

CR: I see. So, if you were to do this performance again, how would you set it up?

Cia: Difficult question. I would quite like to do it at Park Lane again, more or less the same as last time. We would be better prepared, though, and sort of know better what we were doing. I would seat the audience alongside the stage, so that they were at the same level as the stage. I wouldn't use headphones for the first part, either. I would just have the sound coming out of the sound system.

If I were to do it in another space, I would just do it on my own, together with a sound technician. The fact is that I've been thinking about this; I've moaned so much about the disadvantages of working on my own, but now I think that's the way to go! Go solo!



**2016-02-17**

### **POST PERFORMANCE DEPRESSION**

I'm glad I made it happen.

Alone at the Disco.

I recognize this anxiety, this nervousness mixed with stress and constipation.

It will be a release when it's over. And then: What?

Fail again. Fail better.

**2016- 03-15**

### **ON HUMOUR**

"A serious and good philosophical work could be written consisting entirely of jokes."—Ludwig Wittgenstein

A VULGAR JOKE about testicles from Eastern Europe illustrate the fool-knave

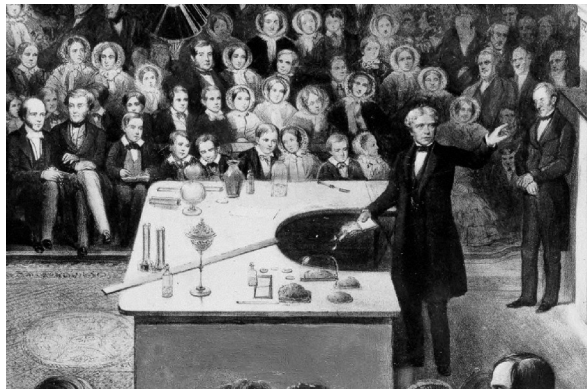
opposition perfectly. A customer is sitting at a bar, drinking whisky; a monkey comes dancing along the counter, stops at his glass, washes his balls in it, and dances away.

Badly shocked, the customer orders another glass of whisky; the monkey strolls along again and does the same. Furious, the customer asks the bartender: “Do you know why that monkey is washing his balls in my whisky?”

The bartender replies: “I have no idea—ask the gypsy, he knows everything!” The guest turns to the gypsy, who is wandering around the bar, amusing guests with his violin and songs, and asks him:

“Do you know why that monkey is washing his balls in my whisky?” The gypsy answers calmly: “Yes, sure!” and starts to sing a sad melancholic song: “Why does that monkey wash his balls in my whisky, oh why ...”

The point, of course, is that gypsy musicians are supposed to know hundreds of songs and perform them at the customers’ request, so the gypsy has understood the customer’s question as a request for a song about a monkey washing his balls in whisky. This is the poetry of ideology at its purest.<sup>33</sup>



Old School Theatrical Physics: Michael Faraday at the Royal Institute,

**2016-03-16**

### **THE GODFATHER OF TECHNOLOGY AND ART: AN INTERVIEW WITH BILLY KLÜVER**

As a rapidly changing era, the twentieth century has witnessed a number of encounters between technology and art. The mechanical age introduced many new alternatives to the materials and concepts of art making.

However, the history of technology and art took a significant turn in the 1960's. With the chasm between the two growing, many artists saw the potential in bringing the divergent fields into harmony. In an attempt to bring technologists and artists together, Experiments in Art and

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<sup>33</sup> Slavoj Žižek, *Zizek's jokes (or did you hear the one about Hegel and negation)* (London: MIT Press, 2016), 53

Technology was formed in 1966.

**E.A.T.**, as the group was called, existed to link artists and engineers in collaborative projects. The apparently impossible gap of engineering and art was explicitly spanned for the first time. At the forefront of this movement was the electrical engineer Billy Kluver - a Ph.D. in electrical engineering who was equally involved in the contemporary art scene. To get to the historical bottom of E.A.T. and the art and technology movement, I tracked down Billy Kluver in New York. Still directing E.A.T. after thirty years, he shared with me his memories, thoughts, and goals.

**What were some of the original ideas and goals in the formation of E.A.T.?**

The goal from the beginning was to provide new materials for artists in the form of technology. A shift happened because, from my own experience, I had worked in 1960 with Tinguely to do the machine that destroyed itself in the Garden of MoMA. At that time I employed - or coerced - a lot of my co-workers at Bell Labs to work on the project.

When I saw that, I realized that the engineers could help the artists; the engineers themselves could be the materials for the artists. After the event, I got besieged by a lot of artists in New York like Andy Warhol, Robert Rauschenberg, Jasper Johns - all of them. Robert Whitman and Rauschenberg put the notion together that it should be a collaboration between artists and engineers, where they were equally represented. The idea was that a one to one collaboration could produce something that neither of the two could individually foresee. And that was the basis for the whole thing, and the system developed from there.

We had to do a lot of "propaganda" because in the 60's the difference between art and engineering was an enormous canyon. We understood that we had to recruit engineers - that was the barrier we had to go through.

This whole thing spread within a year or two all over the United States. So, when an artist phoned in and said: "I have this problem." we had one person on the staff that would find an engineer to help them out - and that was it.

The other thing that we did from the very beginning was organize large projects. The first one of course was NINE EVENINGS in '66, out of which E.A.T. actually came. The main breakthrough in NINE EVENINGS was scale. Everybody in New York was there. Practically every artist in New York helped make it a go, and about 10,000 spectators saw it. Since then we have initiated forty to fifty projects, the last one happening last summer in Northern Greenland.

So those are the two operations of E.A.T.: matching and making projects.

**I have a quote here... "Kluver saw many parallels between contemporary art and science, both of which were concerned basically with the investigation of life...a vision of American technological genius humanized and made wiser by the imaginative perception of artists..." Does that accurately describe your goal?**

Well, it could be said better than that... The way I see it is that artists provide non-artists - engineers or whomever - a certain number of things which non-artists do not possess. The engineer expands his vision and gets involved with problems which are not the kind of rational problems that come up in his daily routine. And the engineer becomes committed because it becomes a fascinating technological problem that nobody else would have raised.

If the engineer gets involved with the kinds of questions that an artist would raise, then the activities of the engineer goes closer towards that of humanity... Now, this is all sort of philosophical - in practice it has to do with doing it.

But what happens, of course, is that the artist widens the vision of the engineer.

And that's what it's all about - GETTING IT DONE - that's the key to all of it.<sup>34</sup>

**2016-04-28**

**JOHN TYNDALL**

*"Here, my friend, our labours close. It has been a true pleasure to me to have you at my side so long. In the sweat of our brows we have often reached the heights where our work lay, but you have been steadfast and industrious throughout, using in all possible cases your own muscles instead of relying upon mine. Here and there I have stretched an arm and helped you to a ledge, but the work of climbing has been almost exclusively your own. It is thus that I should like to teach you all things; showing you the way to profitable exertion, but leaving the exertion to you.... Our task seems plain enough, but you and I know how often we have had to wrangle resolutely with the facts to bring out their meaning. The work, however, is now done, and you are master of a fragment of that sure and certain knowledge which is founded on the faithful study of nature.... Here then we part. And should we not meet again, the memory of these days will still unite us. Give me your hand. Good bye."<sup>35</sup>*

(John Tyndall (1820-1893) one of Ireland's most successful scientists and educators. A draftsman, surveyor, physics professor, mathematician, geologist, atmospheric scientist, public lecturer and mountaineer; his great strength was his ability to communicate science to any audience.)

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<sup>34</sup> Garnet Hertz: [www.conceptlab.com](http://www.conceptlab.com), Interview date: 1995-04-19

<sup>35</sup> John Tyndall, *New Fragments* (miscellaneous essays for a broad audience) (1892)

## Early Bird Theatrical Physics:



The *Illustrated London News* in 1870 printed this illustration of John Tyndall giving a public lecture at the Royal Institution.



(Billy Klüber, NYC; 1966)



**2016-05-15**

## **ALL THE WORLD'S A STAGE**

*All the world's a stage  
And all the men and women merely players;  
They have their exits and their entrances,  
And one man in his time plays many parts,<sup>36</sup>*

Or

*All the world is a theatre and we're all actors in it, as Forced Entertainment stated in their 2001 performance "First Night": except of course that I stand here, in the light, - talking - and you are all sitting there, in total darkness, quiet like mice.*

Concepts that we share but have different meanings to in theatre and physics:

Time  
Space  
Even the concept of Concept  
Field

**2016-05-17**

## **ONTOLOGICAL THIRST**

Only knowledge of reality constitutes truth, and only truth can quench the thirst that leads to research. The point of departure for artists and physicists is difficult. However, art and physics share something in common. Both are driven by ontological thirst, by the thirst to know reality as it is.

Both shun delusion. Both are pursued by truth-seeking communities.

The show must go on. My quench for exploring what theatrical physics could be is huge.

The journey has started.

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<sup>36</sup> William Shakespeare, As you Like It (London: Ed Blount, 1623), 194

## CHAPTER FOUR /SCRIPTS

2014-10-26

### WE CAN FEEL BLUE:

We can feel blue

We can look black and feel blue

But what is the meaning of the colour green?

The weather consists of two colours:

Blue is ice

Red is hot

We can also divide weather into twenty-four passions:

L'admiration, (admiration)

L'amour, (love)

La haine, (hate)

Le desir, (longing)

La joie, (joy)

La tristesse, (grief)

La crainte (fright)

L'esperance (hope)

Le désespoir (despair)

La hardiesse (courage)

La colère (anger)

L'estime (appreciation)

La vénération (honor)

Autre vénération (reverence)

Le ravissement (captivation)

Le mépris (despise)

L'horreur (horror)

La frayeur (fear)

La jalousie (jealousy)

Doleur corporelle (bodily pain)

Le rire (laughter)

Le pleurer (tears)

L'extrême désespoir (extreme hopelessness)

La rage (anger)

#####

We still remember it vividly, that event.

Dark clouds gathered from all sides and spread from country to country;

stormy skies cast their menacing shadows first in one place, then in another.

It was as if everyone was waiting for a dawn, which would not come.

Now insidious doubt seeps into men's minds, breeding a melancholy uneasiness.

Fear takes hold, and the powers of darkness gain sway. Suspicion and distrust grow between nations, between classes, and only thistles prosper in such soil.

Hatred grows; increasing insecurity and fear paralyze all initiative, opening the way to every kind of blunder.

There is talk of another war.

It is as if the world, which had once before hovered on the brink and peered down into the abyss but which had at the eleventh hour dragged itself onto safer ground, is once again in perilous darkness being drawn back into the depths.

What is wrong? What is missing?

It is the good human qualities that can grow only in the light of day: forbearance, confidence, compassion, the sincere desire for full cooperation in rebuilding the world.

On this point we can now see daylight again. Is it not almost as if we are seeing the new earth turn green again after Armageddon?

*"There's a storm coming; be there."*

By the end of April 1893 there was great distress in Sicily for lack of water.

The drought had lasted six months.

Every day the sun rose and set in a sky of cloudless blue. The gardens of the Conca d'Oro, which surround Palermo with a magnificent belt of verdure, were withering.

Food was becoming scarce.

The people were in great alarm.

All the most approved methods of procuring rain had been tried without effect.

Processions had traversed the streets and the fields. Men, women, and children, telling their beads, had lain whole nights before the holy images. Consecrated candles had burned day and night in the churches. Palm branches, blessed on Palm Sunday, had been hung on the trees.

At Solaparuta, in accordance with a very old custom, the dust swept from the churches on Palm Sunday had been spread on the fields. In ordinary years these holy sweepings preserve the crops; but that year, if you will believe me, they had no effect whatever.

At Nicosia the inhabitants, bareheaded and barefoot, carried the crucifixes through all the wards of the town and scourged each other with iron whips.

It was all in vain.

Even the great St. Francis of Paolo himself, who annually performs the miracle of rain and is carried every spring through the market gardens, either **could not** or **would not** help.

Masses, vespers, concerts, illuminations, fire-works – nothing could move him.

At last the peasants began to lose patience. Most of the saints were banished.

At Palermo they dumped St. Joseph in a garden to see the state of things for himself, and they swore to leave him there in the sun till rain fell. Other saints were turned, like naughty children, with their faces to the wall.

Others again, stripped of their beautiful robes, were exiled far from their parishes, threatened, grossly insulted, ducked in horse-ponds.

At Caltanissetta the golden wings of St. Michael the Archangel were torn from his shoulders and replaced with wings of pasteboard; his purple mantle was taken away and a clout wrapt about him instead.

At Licata the patron saint, St. Angelo, fared even worse, for he was left without any garments at all; he was reviled, he was put in irons, he was threatened with drowning or hanging. "Rain or the rope!" roared the angry people at him, as they shook their fists in his face.

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Various kinds of storms: "Typhoon," for certain tropical cyclones, from Cantonese (*toi fung*), (traces a long and multilingual descent prior to that.) "Cyclone," of course, is from Greek *kuklos*, circle; "hurricane" comes from Carib *huracan*. "Tornado" is from Spanish *tronada*, meaning "thunderstorm." "Monsoon" is from Arabic again: *mawsim*, "season." "Tsunami" is Japanese; "blizzard" is of unknown origin. "Squall" is probably Scandinavian, "hail," "rain," "snow," and "wind" itself all come from Old English.

~~~~~  
One thinks we're alone now, there doesn't seem to be anyone around.  
One thinks we're alone now,

The beating of our hearts is the only sound.

**2016-02-02**

## **14 BILLION YEARS OF THEATRICAL PHYSICS**

**Recorded speech by Alexis, the mathematician, march 2015 in Athens. Transcribed by me in a way to remember *how* he spoke:**

If there is a will  
there is a way.  
It's all about gravity.  
Gravity and strength.  
Think about it.  
I've said it before and I'm telling you again:  
It's all about gravity.

Today I shall talk about a very small part...of physic history

that has literally changed the world and our concept of...the universe  
(much beyond what we thought were //...//  
In the beginning of 20th century)

this concept of...the universe reflects on the concepts of ourselves  
because, we, for example, know that in our solar system, there is no life,  
so in a sense, we are the living center – currently – of our solar system

but there are other stars, solar system means star, and there are other  
galaxies and these recent thing about billions of galaxies were discovered  
later, around mid20th century

so then we, our concepts of ourselves, is that we are a tiny speck of sand,  
a fraction of a tiny speck of sand, in the...Time and Space immensity of  
the universe

So, let me go back historically:

I shall choose some points that has changed the physics and our way of  
thinking.

These, by all means, are not the only ones, these are chosen by me, this  
Sunday morning, here in Athens, what's the date..29? March 29, 1915,  
2015

So, what breakthrough of human thought was done by some student of  
Pythagoras – reputedly after Pythagoras died, perhaps?  
Pythagoras was a great Greek mathematician, I remind you, and thinker  
and philosopher, but mainly mathematician, who lived between 570, he  
was born 570 BC and died 495, died at the age of 75 years of age.

But the breakthrough I was talking about, is a student of his – I forget the  
name – *showed* that there are numbers that can not be written as ratios of  
one //ingenus//divided by another

For example, numbers that cannot be written in the form of, let's say 5  
divided by 212.

They are – the whole concepts of numbers of what we today call rational  
numbers that are ratios in //ingenus//number of whole numbers

And then, this student, proved that there are other numbers and in fact, it  
was so revolutionary that these numbers are called to this day...

irrational

They cannot fit that form-

This is quite counter-intuitive

This upset the Pythagorean universe and the story goes that they were on  
a boat, and the other students of Pythagoras *drowned* this student for  
bring about such a revolutionary thinking that upset the whole concept of  
"reality",  
in quotation marks

I jump now, something like a thousand years almost, or more, 11-1200  
years –

to Isaac Newton, who lived from 1642 to 1726, that is to say he died at 84  
years of age

going back to Pythagoras, he was 75 when he died, Pythagoras.

Newton was 84.

There is another protagonist in this story, that is the German philosopher Leibniz, who lived from 1642 to 1716. He died at 70 years of age.

And, why do I mention these two mathematicians/philosophers?

It's because they *independently* discovered...or created...whichever you prefer...discovered or created...I would say mainly created – the so-called Calculus – mathematical calculus.

Infinitesmo.

Some notions that are taught at all engineering and all mathematical schools today- universities, I mean,

The notion of derivative of a function  
the integral of a function,  
these are notions basic to what is called calculus.

Ok, so what did Newton and independently, Leibniz, show?  
What did they make?

They, from their researches, comes out what inside is called differential equations – which means – with differential equations – you can predict the future

in a sense it's a magical thing.

You can predict the future!

Now, that's almost one of the definitions of magic, isn't it,  
that you can predict the future

And let me be more specific:

Today, when we throw some object into space and the scientist assures us that after a 127 years, for example, 4 months and two weeks, the projector that we have thrown in space, will hit such and such planet

Now, that's a prediction, isn't it?

I mean, you are telling, with certainty, what will happen after, what did I say, a 127 years and so many months and so many weeks.

That is prediction.  
This is magic.

This came out from the invention of the mathematical calculus and this of course revolutionized science.

It has revolutionized science *because we can predict*.

And the way it works more analytically is: the statement is that if you know the field you are working on, for example magnetic field, or electro-magnetic field, or

gravitational field-

if you know the field that acts on the body and the so called initial conditions like how you throw it,

then you can predict its future history.

So, if you know the field and you know the so called initial conditions, like where the object in question is, what that you say you threw or put in a electro-magnetic field,  
You can predict its future behaviour.

This is of course a revolution,  
a great revolution  
and this was only possible from the great breakthroughs that the Greeks, the ancient Greeks and the in mathematical thinking...and were that...  
now, it's interesting that both Leibniz and Newton, they both discovered the same thing, independently,  
Newton being an Englishman, Leibniz is a German,  
Newton was born 1642,  
Leibniz 1646,  
so they have the same age really  
and they both lived a long time  
and in fact it was quite a scuttle between them –  
Newton was much more aggressive, that's why we know his name more  
Newton was very good also with politics, so he *pushed* through his discoveries.

So... Now, we jump into the... from that period... oh, yes, I also wanted to say that HOW did, say, Greek mathematics enforce Newton and Leibniz in this noble simplification?

Well, it's a schematic way of saying things which are (is, sic.) basically true in the sense that the  
Renaissance that started in Italy, as we know, after the so called middle ages, let's say 14 century after Christ, something like that, around there, - plus or minus –  
that brought in the ancient Greek thinking, and this was the great intellectual, if you will, leverage or influence, that permitted the renaissance to flourish  
not only in mathematics.  
I mention mathematics because we are talking about physics now, but of course, this is very well known, with art  
and generally speaking in the liberation of thinking  
out of the middle ages, so in that sense there is this historical link.

And let me go back and say that this existance of another number was a breakthrough in human thought,  
Because usually, up to the Greeks, we didn't have so called mathematical proof, and mathematics, I remind you, is the language of physics.

So, it's one thing to proof that something exists, because you constructed and showed it  
and it's another thing to PROOF, strictly, that something does not exist! because, if you want to proof that such and such chair exists, well, if youre lucky, you will find it and say "Here" –  
this is so called constructed proof,  
so you find it, it exists,  
but to PROOF that such and such object does NOT exist,  
well, you might look for it all your life and maybe (hehe) you didn't find it, you can proof that you didn't find it,



you can proof that you didn't find it but you don't proof, you didn't proof that it doesn't exist!

This was really a great breakthrough of human thought in the sense that the notion of strict mathematical proof, (was, sic.)  
For such kind of thinking,  
Appeared

So I, so let me jump now from the 17 century of Newton and Leibniz to the early 20th century and WHY?  
We can mention the name Einstein but there are many other very notable physicists and mathematicians  
And let's, let's examine and describe the so-called Big Bang.  
The Big Bang tells us that, something like 14 billion years ago, the Universe – that is to say the millions of galaxies, not only all the stars that we see, but the galaxies that we don't see-  
Are... they were all... all these galaxies, including ours, were... you can think of them as in the size of a pea.

There was no space. There was no time.

These are difficult notions for a non-expert to conceive, but we have a lot of... and this...  
Infinitessmo, Tiny,  
With, close to infinite density, of course  
of mass and energy  
exploded, so to speak,  
and created, gradually created,  
the Universe.

And still, the Universe is still expanding!

Now,  
This is really crazy, I shall admit, that there was no space and no time before that,  
It didn't exist.  
But what's amazing and fascinating is that we have three independent, three independent experimental facts that support this theory, crazy as it sounds

We have three... so this is not a proof of the so called Big Bang-theory of the creation of the Universe... it's not a proof, but these three independent ways suggests strongly,  
according to most current physicists,  
that that's the way it was!

It's pretty crazy, I admit.  
And, we have experimental, not proofs, but suggestions, that this was the case.

Ok, now,  
What...where does this physics and mathematics come in?  
Physics is because this was able to be this theory, was able to be created from a lot of physics that had accumulated in all of human history  
And of course, the way it was shown in, or developed, the theory, I mean,

to come to that conclusion –  
was mathematics –

and let me introduce a parenthesis here:

How is it – of course the question is How the Hell did they show such a thing? (he, he)

14 billion years.

I'm introducing a parenthesis here:

People don't understand – laymen and lay women – don't understand really big numbers.

For example

If you have... in relation to our life scale, for example... I'll give you an example:

We are... let's say that the modern life span of children that are born now – just to round the numbers – let's say that the life span of a person being born now is one hundred years. One hundred years.

I'm showing that normal people don't understand numbers.

Ok, so, the average life span of humans, of young humans, is a hundred years... approximately.

Let's put only one zero after a hundred years. One zero after a hundred years is a thousand years.

A thousand years ago is close to one thousand after Christ,  
That's sort of smack middle ages  
We just added one zero, so that's a thousand.  
Let's add another zero,

I'm in the parenthesis now,

We add another zero,  
That is ten thousand. Ten thousand years ago is  
What? Before the Egyptians!(he, he)

Before history, in a sense.

So – and we only added two zeroes to our life span –

So, imagine....

I close the parenthesis.

So, imagine how difficult it is for us to conceive,  
at our scale of time,

14 billion years ago,  
14 billion years,

if you count the zeroes of 14 billions...

Anyway, that's what they,  
according to this theory which, I repeat,  
is the most credible theory that we have today!

Is.. that's when the Universe started,  
with a big bang,  
that's what they call that instant in the history of the universe  
that's why they call it Big Bang, because it exploded,  
it was a big bang,  
it was an enormous...

And still, the Universe is expanding  
and there is no centre in this expansion.

Now we go into theory of theory of relativity... general theory for relativity

And that brings us to Einstein and the great physicists in the beginning of  
the 20th century.

I will not mention the names,  
you can look them up in Google,

the mathematical physics that led to the so called Big Bang

How did they... how did they ever come up with that?

I shall...which is an amazing thing...that we can go back approximately  
14 billion years  
and now – what happened?

I don't know what happened yesterday!

Anyway, hundred and billion years,

WAY before before it was any life on earth  
before even the earth has been created  
they say our earth was created approximately 4 billion years ago,  
from the sun.

It's an astonishing concept!

Anyway, what did they do?

And here, I'm linking now  
Pythagoras, Newton and Leibniz and Einstein and Heisenberg and the  
very amazing physicists of the 20th century, and the middle of the 20  
century.

So, how did they come to that point?

What they did is they considered the space/time,  
space and time,  
as a locus of consideration  
and instead of predicting in the future,  
as Leibniz and Newton showed  
with the differential calculations,  
using the equations of Einstein  
and other things that structures that,  
verify,  
instead of predicting in the future,  
in this Space/Time manifolds,  
as it is called,  
they predicted the past.

And space and time was shrinking  
and there they went to the big bang point  
14 billion years ago  
which is sort of an amazing thing of human thought.  
And that's where we are today!

And, I would like to make a more general, a more general comment about  
science, physics:

First of all,  
What's the relation of physics and maths?

It's... in many ways they are, they are, they're twin brothers and sisters

How? Because physics is an observation and the, and the,  
usage of this observation, in the theories,  
is that of mathematics.

And what's amazing with, with mathematics now,  
as it is used,  
historically it has been used with physics and continues,  
is that, it's that  
the results that we get are so counter intuitive.

They're so strange.

What's amazing, and this is due to mathematics, because physics is  
observation, basically  
And the language of the Universe is mathematics

And it's interesting that we can go so far from our own scale of  
observations of time and space  
and presence  
and our Universe  
our world

I drop a glass of water  
and it falls down and it breaks.  
So, I make this observation

We go so far into the macro world

this far away galaxies  
and the micro world, the atomic and the nucleus micro cosmos.

They are so away from our possibility of observations  
And we can also... we know so much about these things.

And one of the things I mentioned the other day to my friend (Cecilia)  
Is that we're so used to the predictability of science.

We're so used to that  
That when we travel for example by aeroplane,  
there are maybe ten thousand, I don't know, some big number,  
let's say ten thousand, or more than that or less than that,  
formulas,  
physics formulas  
and mathematical formulas  
there,  
that makes the plane, permits the plane to fly.

And we believe so much in the credibility of science,  
that we risk our life without a second thought

That shows to somebody who is not a scientist,  
that shows the reliability of these discoveries.

Without a second thought we risk our lives based on these things.

In the car, for example, each time we step on the break, we know that it  
will work.

So, although these theories sound crazy, they look so crazy  
because they're so far away from our observations.  
our scale is very different,  
and, the Miracle, if you will, the amazing strength of the human mind,  
is that it can go and verify things that happened at such a faraway scale  
from our own... from our own

You can take something that people know, that people, that everybody  
knows, who is an adult

How... let's take the computer, let's take a smart phone, and I phone a  
smart phone,  
I mean, here is this little thing where we can, just by writing anything that  
comes to mind, say, google and within a second or two, we have, say, ten  
thousand entries about that subject.

If you think of it, it's amazing  
You know, if somebody were isolated and didn't see the gradual evolution  
of computers and all of a sudden you saw an I phone - you show him  
what the I phone can do - he would just go crazy!

So, what way of seeing the new discoveries that are to come,  
not only in physics but in science in general,  
in biology for example,  
these very strange things is...

and you say, well, how could that ever happen?  
Well, think of the fact that 150 years ago we didn't have almost any of the technical things that we use today.

Just a hundred and fifty years ago!

Also in chemistry, in materials,  
they make materials now  
that are very thin and very light  
that – very thin – they are less than tenth of a centimetre thick, and light-  
that is stronger than five inches of steel!

There are things that are not so visible,  
we all know computers and we wonder, we marvel at their capabilities  
but there are other things that are happening – that are...

and of course in biology... this DNA business... is amazing...  
that we can look at, we can see mummies of the Pharaohs and other  
bones of ancient times and be able to deduce the travels of different  
population: they came from this part of the earth or the other,  
and of course in forensics,  
today just from a, just because somebody touched something they have  
his DNA and they can tell who this person is.  
We're not talking about fingerprints here, we're talking about something  
much more subtle.  
Anyway, this is our universe  
(hehe)  
This world.

And if you compound this  
with Darwinism, that we weren't always as smart as this we are today  
and as self-destructive as we are today.

We were like chimpanzees  
and lower yet!  
This has been proven  
The Darwinian theory has been proven, it is 100 % that way,  
because we see, like dogs for example, in ancient times,  
In pre-historic times, that they hadn't been as developed as much as  
current dogs are,  
And so forth.

So, what's interesting is that before apes, like some millions of years ago,  
before there wasn't any intelligence on earth higher than that, let's say, of  
a dog or a mouse

They weren't humans

So, we developed by this Darwinian way to be able to predict and to  
construct  
So many tools beyond our own...

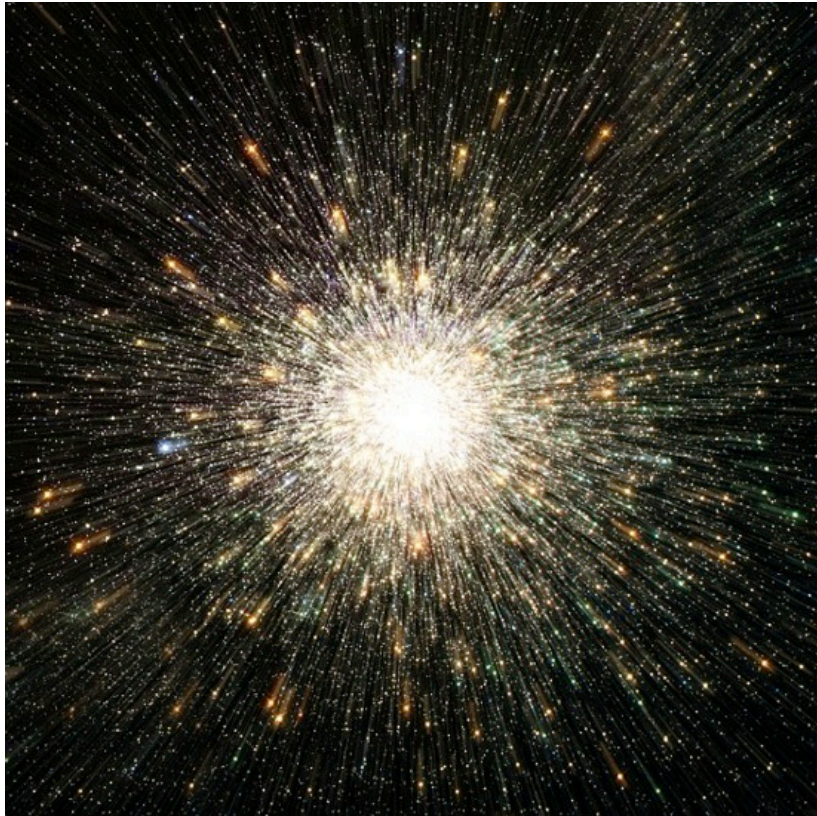
And in this most extraordinary ability to expand our knowledge  
we were also able to expand our ability for destruction,  
like we made the atomic bombs,

biological warfare,  
We expanded in all directions  
Good and Bad.

Our curiosity had no bounds.

That's so...Again, the universe that didn't always exist  
But also the human intelligence didn't always exist!

So, that's the marvellous story of our existence!



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